

CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

PROJECT MANAGER			JOB NUMBER (JN)	CONTROL SECTION (CS)
DESCRIPTION IF NO JN/CS				
MDOT PROJECT MANAGER: Check all items to be included in RFP. WHITE = REQUIRED GRAY SHADING = OPTIONAL Check the appropriate Tier in the box below			CONSULTANT: Provide only checked items below in proposal.	
TIER I (\$25,000-\$99,999)	TIER II (\$100,000-\$250,000)	TIER III (>\$250,000)		
			Understanding of Service	
			<i>Innovations</i>	
			<i>Safety Program</i>	
N/A			Organization Chart	
			Qualifications of Team	
			Past Performance	
Not required as part of official RFP	Not required as part of official RFP		Quality Assurance/Quality Control	
			Location of Service Personnel (Only check for on-site inspection services)	
N/A	N/A		Presentation	
N/A	N/A		Technical Proposal (if Presentation is required)	
3 pages including cover sheet (No Resumes)	7 pages	19 pages	Total maximum pages for RFP not including key personnel resumes	

**BUREAU OF HIGHWAYS
REQUEST FOR PROPOSAL
For
QUALIFICATIONS BASED SELECTION FOR PREQUALIFIED SERVICES**

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is currently prequalified for this type of work and you are interested in providing services, please indicate your interest by submitting a Proposal. The Proposal must be submitted in accordance with the latest "Vendor Selection Guidelines for Service Contracts", available on the MDOT website.

For efficiency sake, we are asking that the vendor firm provide 5 paper copies of the Proposal to the MDOT project manager named below:

MDOT Project Manager
Matthew W. Block, P.E.
1420 Front Ave. NW
Grand Rapids, MI 49504

These copies must be received by **3:00 PM on May 1, 2006**. Fax and electronic copies are not acceptable.

In addition, provide one **stapled** copy to:

Regular Mail:
Secretary, **Operations Contract Support**
Michigan Department of Transportation
P.O. Box 30050
Lansing, MI 48909

OR

Overnight Mail:
Secretary, **Operations Contract Support**
Michigan Department of Transportation
425 W. Ottawa
Lansing, MI 48933

This copy is to be received within three working days after the due date and time specified above. Please do not deliver in person.

Any questions relative to the scope of services must be submitted by e-mail to the MDOT project manager. Any questions must be asked at least three working days prior to the due date and time specified above. All questions and their answers will be placed on the MDOT website as soon as possible after receipt of the questions. The names of vendors submitting questions will not be disclosed.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

The selection team will review the information submitted and will select the firm considered most qualified to perform the engineering services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

The maximum allowable pages for the proposal are limited to the selected Tier shown on MDOT Form 5100B, which is posted with this RFP. Page limits apply to the entire proposal. The number of pages per section is the decision of the creator of the proposal. Include in proposal only those items that are checked by the MDOT project manager on form 5100B.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

The scope of services is attached to this solicitation.

PROJECT LOCATION:

- CS 41131 – JN 51902C: US-131 Interchange at 44th Street (S06 of 41131), in the City of Wyoming, Kent County.

CONTROL SECTION, JOB NUMBER: CS 41131-JN 51902C

DESCRIPTION OF WORK:

Interchange reconstruction. The current interchange is a diamond configuration. This project is being done to reconstruct the existing interchange into a Single Point Urban Interchange (SPUI). The work will include ramp re-alignment and reconstruction, as well as replacing the existing structure.

I Primary Prequalification Classification:

*Short & Medium Span Bridges
Complex Urban Freeway design*

II Secondary Prequalification Classification:

Geotechnical Engineering Services, Freeway Lighting, Road Design Surveys, Structure Design Surveys, Maintaining Traffic Plans & Provisions, Pavement Marking Plans, Permanent Non-Freeway Traffic Signing Plans, Traffic Signal Design, ITS design.

The anticipated start date of the service is May 10, 2006.

The anticipated completion date for the service is April 7, 2008.

DBE Requirement: 10%

SCOPE OF DESIGN SERVICES
CS 41131 - JN 51902C
US-131 at 44th Street – S06 of 41131
City of Wyoming, Kent County

I. SCOPE OF CONSULTANT DUTIES

Complete the design of this project including, but not limited to the following:

- A. Perform design survey. (see attachment B)
- B. Perform a drainage study and related design.
- C. Prepare required plans, typical cross-sections, details, and specifications required for design and construction.
- D. Compute and verify all plan quantities.
- E. Prepare staging/detour plans and special provisions for maintaining traffic during construction.
- F. Prepare pavement marking plans and special provisions.
- G. Prepare traffic signal plans and special provisions. The signal design shall include a battery back-up system, and communications cable that interfaces with the back up power system, so that appropriate maintenance and/or emergency agencies can be notified in the event of power failure.
- H. Prepare hydraulic study – Add task for performing hydraulic study for conveyance of storm water.
- I. Prepare permanent signing plans and special provisions for freeway and non-freeway sign upgrading. Also, update MTSIS (Michigan Traffic Sign Inventory System) to reflect permanent changes and/or additions made in the project area signing.
- J. Prepare Design Exception Requests if necessary for this project. The Consultant shall prepare the necessary documentation and reference material to complete the request for any design exceptions for this project. MDOT will submit any requests for approval.

- K. Incorporate placement of Intelligent Transportation System (ITS) hardware/conduit within the project limits. Exact locations to be coordinated with MDOT.
- L. Prepare Right-Of-Way plans as required to locate, verify and purchase real estate and/or obtain construction access permits for this project.
- M. Prepare detailed Right-of-Way displays, if needed, for use at meetings and/or presentations.
- N. Develop Freeway and Interchange Lighting plans.
- O. Provide solutions to any unique problems that may arise during the design of this project.
- P. Prepare pavement marking plans and special provisions. As part of this task, the Consultant shall provide a detailed list, including control section and mile points, of any additional length of permanent pavement markings added to the project area as a result of this project.
- Q. The Consultant may be required to provide Design Services during the construction phase of this project. If Construction Assistance is required, then a separate authorization for those services will be issued.
- R. Coordinate design of project with the adjacent reconstruction project on 44th St. currently being designed by the City of Wyoming. It is anticipated that the construction work on 44th St. adjacent to this project will coincide with the construction work for this (MDOT) project. The Consultant shall coordinate the design of the MDOT project with that of the City of Wyoming project so as to provide a seamless transition between the projects. This includes any translation or conversion of any of the electronic files, provided by the City of Wyoming, for information into the current design software, as required by MDOT. The Consultant may be required to package the City of Wyoming's project with this MDOT project into one comprehensive biddable package. All correspondence with the city shall be through the MDOT project manager, unless otherwise agreed upon.
- S. Conduct all soils/geotechnical investigations for this project.
- T. Provide materials for a variety of presentations and meetings.

II. PROJECT LOCATION

This project is located at the interchange of US-131 and 44th Street, in the City of Wyoming, Kent County.

III. PROJECT DESCRIPTION

This project consists of all work related to designing this interchange project, including but not limited to the following.

The interchange from US-131 NB&SB to 44th Street currently operates as a diamond. The proposed interchange will be a Single Point Urban Interchange (SPUI). Work to reconstruct the existing interchange in to a SPUI will include, but will not be limited to, the following general work items: Removal and reconstruction, with widening and lengthening of the 44th Street structure over US-131, pavement removal, clearing, grading, underdrains, curb & gutter, culverts, culvert extensions, storm sewer, placement of the chosen pavement section, overhead sign trusses and/or cantilevers, signing, temporary and permanent pavement markings, shoulder aggregate, guardrail, traffic signals, approximately 1500 feet of retaining walls, ITS conduit, cameras, and possibly other ITS hardware, ROW fence removal and replacement, replacement of the existing structure, bridge concrete approach items, freeway and under-bridge lighting, topsoil placement and related restoration items. The Consultant will also be required to develop any required ROW plans.

General

Work shall conform to current MDOT, FHWA, and AASHTO practices, guidelines, policies, and standards (i.e., Road Design Manual, Standard Plans, Drainage Manual, Roadside Design Guide, A Policy on Geometric Design of Highways and Streets, Michigan Manual of Uniform Traffic Control Devices, etc.).

Vendor is required to use MDOT's current version of Bentley MicroStation for CADD applications and Bentley GEOPAK for road design. Vendor shall comply with all MDOT CADD standards and file naming conventions.

IV. PROJECT CONSTRUCTION COST

A. The estimated cost of construction is:

1.	Safety Related Work	\$ 60,000
2.	Base, Surface and Shoulder	\$3,515,180
3.	Non-Motorized	\$ 0
4.	Geometric Improvements	\$ 0
5.	Improve Alignment (Vertical/Horizontal)	\$ 0
6.	Structures	\$4,549,030
7.	Drainage Adjustment and Improvement	\$ 323,250
8.	Joint Repair and Pavement Patching	\$ 0
9.	Detours and Maintaining Traffic	\$ 800,000
10.	Permanent Pavement Markings/Signs/Signals	\$ 256,000
11.	Miscellaneous	<u>\$1,000,000</u>
	CONSTRUCTION TOTAL	\$9,504,460

B. The estimated cost of real estate is: \$ 500,000

The above construction total is the amount of funding programmed for this project. The Consultant is expected to design the project within the programmed amount.

If at any time the estimated cost of construction varies by more than 5% of the current programmed amount, then the Consultant will be required to submit a letter justifying the changes in the construction cost estimate.

V. PROJECT SCHEDULE

The scheduled Consultant's plan completion date (final turn-in to MDOT) for this project is **November 9, 2007**. The Consultant shall use the following events to prepare the proposed implementation schedule as required in the Guidelines for the Preparation of Responses on Assigned Design Services Contracts. These dates shall be used in preparing the Consultant's Monthly Progress Reports.

<u>Target</u>		
<u>Date</u>	<u>Task #</u>	<u>Description</u>
06/08/2006		<i>Anticipated Authorization</i>
	3330	Conduct Design Survey
	3340	Conduct Structure Survey
10/26/2006		Submit Project Survey Control and Adjustments
	3350	Submit Survey Final Deliverables
	3360	Prepare Base Plans
		Submit Base Plans

	3361	Submittal of Preliminary Right-Of-Way Plans
	3370	Prepare Structure Study
	3380	Review Base Plans
	3390	Develop the Construction Zone Traffic Control Concepts
12/12/2006	3510	Perform Roadway Geotechnical Investigation
		Submit Plans for Utility Review (approximately 50% complete)
	3522	Perform Hydraulic Study for the Conveyance of Storm Water
	3530	Conduct Foundation Investigation
	3540	Develop Construction Zone Traffic Control Plan
	3551	Perform/Review Traffic Signal Operations Plan
	3552	Develop Preliminary Permanent Pavement Marking Plan
	3553	Develop Preliminary Non-Freeway Signing Plan
	3554	Develop Preliminary Freeway Signing Plan
	3570	Prepare Preliminary Structure Plans
	3580	Develop Preliminary Plans
		Submit Preliminary Plans
04/18/2007	3581	Final Right-Of-Way Plans
	4130	Prepare Marked Final R.O.W. Plans
	3590	Review Preliminary Plans (The Plan Review)
	3670	Develop Municipal Utility Plans
	3675	Develop Electrical Plans
	3680	Obtain Required Municipal Utility Permits
	3821	Complete/Review Traffic Signal Plans
	3822	Complete Permanent Pavement Marking Plan
	3823	Complete Non-Freeway Signing Plan
	3824	Complete Freeway Signing Plan
	3830	Complete the Construction Zone Traffic Control Plan
	3840	Develop Final Plans and Specifications
	3850	Develop Structure Final Plans and Specifications
08/27/2007		Submit Pre- Final Plan/Proposal Package to MDOT for Pre-OEC review (approx. 95% complete)
		Hold Pre-Omissions/Errors Check Meeting
		Submit Final Plan/Proposal Package to MDOT for final review (100% complete)
10/05/2007		Consultant's Plan Completion: Final Construction Plan/Proposal package with recommendations incorporated to MDOT
	3870	Hold Omissions/Errors Check (OEC) Meeting
11/02/2007		Omissions/Errors Check (OEC) Meeting (approximate date)
04/07/2008		Final Deliverables to MDOT

VI. PAYMENT SCHEDULE

Compensation for this Scope of Design Services shall be on an actual cost plus fixed fee basis.

VII. MONTHLY PROGRESS REPORT

On the first of each month, the Consultant Project Manager shall submit a monthly project progress report to the **Matt Block**, Project Manager, and **Tim Barry**, the Bridge Consultant Coordinator. The monthly progress report shall follow the guidelines in attachment E.

VIII. DELIVERABLES

The Vendor shall deliver all computer files associated with the project in their native format (spreadsheets, CADD files, GEOPAK files, etc.) on DVD, CD or uploaded to ProjectWise, as directed by the MDOT Project Manager. All CADD/GEOPAK files shall be created and identified with standard MDOT file names as shown in Appendix A of the Road Design Manual.

It is the vendor's responsibility to obtain up to date MicroStation and GEOPAK seed/configuration files necessary to comply with MDOT's CADD standards which are posted to the bulletin board system. When the use of GEOPAK road design software is necessary to develop plans all pay items shall be placed into the CADD file using GEOPAK's Design and Computation Manager so that Quantity Manager can be used to transfer pay item information to SAPW/Trns*port. Any CADD/GEOPAK files that do not conform to MDOT standards will be returned to the vendor for correction at the vendor's expense.

Proposal documents shall be submitted in their native format with standard naming conventions as well as combined into one Adobe PDF file in the sequence specified by MDOT. To provide text search capabilities the combined proposal shall be created by converting native electronic files to PDF. Scanning to PDF is discouraged except in instances where it is necessary to capturing a legally signed document or a hard copy version of a document is all that exists.

Plan files shall be submitted in their native dgn format with standard naming conventions as well as plotted into a combined Adobe PDF file. Plan sheets shall be plotted to Adobe PDF with full text search and level on/off capabilities in each full size (24" x 36") and half size (11" x 17") formats. A full size title sheet shall be plotted stamped and signed then scanned for inclusion with the Adobe PDF set. The original title sheet will be sent to the MDOT Project Manager. The Consultant shall provide two (2) sets of half-size (11"x17") final plans plotted on paper at the time of project turn-in.

The Consultant will be responsible for providing paper copies of the plans at the various review states. The number of copies per stage is estimated to be as follows:

Base Plan Meeting – 25 copies (11"x17")

Plan Review – 4 copies (11"x17")

Pre-OEC – 30 copies (11"x17")

OEC – 10 copies (11"x17")

These are estimated numbers of plan sets that may be needed. The consultant shall coordinate with the MDOT Project Manager prior to each submittal for confirmation on the number of plan sets that will actually be needed.

Stand Alone Proposal Estimator's Worksheet (SAPW) shall be used to generate the txt and csv files necessary for import into the Trns*port bid letting software. The SAPW files shall be transmitted electronically by the method specified by the MDOT Project Manager.

Other plan sheets that are required for this project shall be completed by the Consultant. These include, but are not limited to the following plan sheets:

- A. The title sheet. MDOT will provide a map of the area on a disk in our workstation format. If the map is not available, MDOT will provide a map that could be used. The Consultant shall be responsible for any revisions to the title sheet and the title sheet and map shall meet MDOT format and layout guidelines.
- B. Note Sheet.
- C. Typical Cross-Sections.
- D. Project specific Special Details.
- E. Construction staging and traffic control plans.
- F. Detail grade sheets for major intersections, ramp gores and critical areas.
- G. Paving details.
- H. Pavement marking plan(s).
- I. Culvert detail sheet(s).
- J. Vicinity and drainage map sheet.
- K. Alignment sheet.

- L. Witness and benchmark sheet(s).
- M. Soil boring log sheet(s).
- N. Proposed Retaining Wall sheet(s).
- O. Bridge plan sheet(s).
- P. Proposed Guardrail sheet(s).

All plans, special provisions, estimates, and other project related items shall meet all MDOT requirements and detailing practices (i.e., format, materials, symbols, patterns, and layout) or as otherwise directed by the Project Manager.

All plans, specifications, and other project related items are subject to review and approval by MDOT.

IX. UTILITIES

The Consultant shall be responsible for obtaining and showing on the plans the location and names of all existing utilities within the limits of the project. In the course of resolving utility conflicts, the Consultant shall make modifications to the plans or design details and provide assistance as directed by the MDOT Utility Permits Engineer and/or Project Manager. The Consultant shall attend any utility meetings called to ensure that the concerns are addressed on the plans involving utilities. The Consultant shall assist in the review of utility permit requests to ensure compatibility with the project. The Consultant will be responsible for miscellaneous staking of utilities.

X. TRAFFIC CONTROL AND MDOT PERMITS

The Consultant shall be responsible for all traffic control required to perform the tasks as outlined in this Project Scope of Design Services.

The Consultant shall be responsible for obtaining up to date access permits and pertinent information for tasks in MDOT Right of Way (ROW). This information can be obtained through Pam Sebenick, Utilities/Permits Section, Real Estate Division at (517) 373-7680

XI. PRE-QUALIFICATION AND SUBCONTRACTING OF CONTRACT WORK

Any task(s) for which the Consultant is not prequalified must be completed by a Subcontractor that is pre-qualified for that task(s). Any questions regarding prequalification should be directed to Phil Brooks, Prequalification Manager, at (517)335-2514.

The Department's prequalification is not a guarantee or warranty of the subcontractor's ability to perform or complete the work subcontracted. The Consultant remains fully responsible to the Department for completion of the work according to the **contract** as if no portion of it had been subcontracted.

All subcontractor communications with the Department shall be through the Consultant to the MDOT Project Manager. This requirement may be waived if a written communication plan is approved by the MDOT Project Manager.

The Department may direct the immediate removal of any subcontractor working in violation of this subsection. Any costs or damages incurred are assumed by the Consultant by acceptance of the **contract**. It is further understood that the Consultant's responsibilities in the performance of the contract, in case of an approved subcontract, are the same as if the Consultant had handled the work with the Consultant's own organization.

XII. CONSULTANT RESPONSIBILITIES (GENERAL)

- A. Meet with the MDOT Project Manager to review project, location of data sources and contact persons, and review relevant MDOT operations. The Consultant shall review and clarify project issues, data needs and availability, and the sequence of events and team meetings that are essential to complete the design by the project plan completion date. Attention shall be given to critical target dates that may require a large lead time, such as geotechnical requirements, ROW submittal dates, Railroad coordination requirements, utility conflict resolution, local agency meetings, etc.
- B. Maintain a Design Project Record which includes a history of significant events (changes, comments, etc.) which influenced the development of the plans, dates of submittals and receipt of information.
- C. **P/PMS TASK 3330 - CONDUCT DESIGN SURVEY**
Perform surveys as necessary to design this project (see Attachment B). The Consultant's survey shall be as complete and accurate as necessary to:
 - 1. Calculate and verify plan quantities to the Consultant's standards.
 - 2. Locate and lay out the future construction of this project.
 - 3. Perpetuate affected property controlling corners for monument preservation.

As part of the design proposal, the Consultant shall present a detailed survey work plan for review, evaluation and acceptance by the MDOT Project Manager. A final survey

report for review and approval by the MDOT Survey Unit **is** required. The Consultant shall submit the project control and adjustments upon completion of this portion of the work. Acceptance of the survey by MDOT Design Survey does not in any way relieve the Consultant of responsibility and liability for the content of the survey.

- D. **P/PMS TASK 3340 - CONDUCT STRUCTURE SURVEY**
See Consultant Manual Attachment E for details.
- E. **P/PMS TASK 3360 - PREPARE BASE PLANS**
See Consultant Manual Attachment E for details.
- F. **P/PMS TASK 3361 - SUBMITTAL OF PRELIMINARY RIGHT-OF-WAY PLANS**
See Consultant Manual Attachment E for details.
- G. **P/PMS TASK 3370 - PREPARE STRUCTURE STUDY**
See Consultant Manual Attachment E for details.
- H. **P/PMS TASK 3380 - REVIEW BASE PLANS**
See Consultant Manual Attachment E for details.
- I. **P/PMS TASK 3390 - DEVELOP THE CONSTRUCTION ZONE TRAFFIC CONTROL CONCEPTS**
See Consultant Manual Attachment E for details.
- J. Develop the bridge items required for this project according to the enclosed Attachment A.
- K. Perform storm sewer design calculations, including appropriate outlets and energy dissipation if necessary, as outlined in the MDOT Drainage Manual. Detention may be required. Detention pond design must meet, but is not limited to, local agency storm water regulations and Michigan Department of Environmental Quality water quality permit requirements. Submit all design calculations, drainage maps, and proposed profiles to the MDOT Project Manager for review prior to the Plan Review.
- L. The consultant shall identify the locations of any water main and/or sanitary sewer on the project.
- M. If watermains and/or sanitary sewers are present within the project limits, the CONSULTANT shall evaluate the necessity for the relocation of water mains and sanitary sewers, in accordance with Design Division's Informational Memorandum #441B and #402R dated April 13, 1992. The CONSULTANT shall submit a report to Steven J. Urda, Design Engineer - Municipal Utilities, Design Division for review and concurrence. A copy of the report shall be sent to the Project Manager. **If relocation is**

necessary and watermain and/or sanitary sewer work is not part of the Scope Of Work, contact the MDOT Project Manager immediately.

N. P/PMS TASK 3510 - PERFORM ROADWAY GEOTECHNICAL INVESTIGATION

Perform the needed soils surveys, soils boring and geotechnical investigation that will be needed to develop the construction plans and quantities. Also perform the analysis of this data. See Consultant Manual Attachment E for details.

MAINTAINING TRAFFIC DETAILS:

This includes providing a Lighted Arrow Panel, appropriate Warning Signs and Flaggers when needed. All work must be completed on weekdays between the hours of 9:00 a.m. and 3:30 p.m. No more than one lane will be closed at any time.

CORING FREQUENCY:

Pavement coring shall be done at a minimum of 30 locations distributed evenly throughout this project, including locations on NB & SB US-131 lanes and shoulders, on 44th St, and on all existing ramps.

Hand auger borings shall be done through all pavement core holes to a depth of 5 feet. Where granular soils are encountered, samples shall be obtained and tested to determine whether the soil meets Class II or III requirements, per the **2003 Standard Specifications for Construction**. Results of the testing shall be summarized on the core/boring log with a description of the soil layer tested.

BORING FREQUENCY AND DEPTH:

The consultant will be required to obtain up to a maximum of 25 borings along the proposed ramp alignments. These borings shall extend to a depth of 15 feet, and shall be located at the direction of the Grand Region Soils and Materials Engineer.

Deeper soil borings with blow counts are required for all proposed sewers, structures, signs (trusses and cantilevers-estimated 8 borings), and strain poles, including high mast tower lighting. These borings generally follow the guidelines as outlined in PPMS Task 3530, and the document titled "Geotechnical Investigation and Analysis Requirements for Structures" dated March 2004, listed on MDOT's public web site under "Construction and Technology and Geotechnical Services Unit. A Geotechnical report may be required.

O. P/PMS TASK 3540 - DEVELOP CONSTRUCTION ZONE TRAFFIC CONTROL PLAN

See Consultant Manual Attachment E for details.

P. P/PMS TASK 3551 - DEVELOP/REVIEW PRELIMINARY TRAFFIC SIGNALS PLAN

See Consultant Manual Attachment E for details.

Q. P/PMS TASK 3552 - DEVELOP PRELIMINARY PERMANENT PAVEMENT MARKING PLAN

See Consultant Manual Attachment E for details.

R. P/PMS TASK 3553 - DEVELOP PRELIMINARY NON - FREEWAY SIGNING PLAN

See Consultant Manual Attachment E for details.

S. P/PMS TASK 3554 - DEVELOP PRELIMINARY FREEWAY SIGNING PLAN

See Consultant Manual Attachment E for details.

T. P/PMS TASK 3570 - PREPARE PRELIMINARY STRUCTURE PLANS

See Consultant Manual Attachment E for details.

U. P/PMS TASK 3580 - DEVELOP PRELIMINARY PLANS

See Consultant Manual Attachment E for details.

V. P/PMS TASK 3581 - FINAL RIGHT-OF-WAY PLANS

See Consultant Manual Attachment E for details.

W. P/PMS TASK 3590 - REVIEW PRELIMINARY PLANS (THE PLAN REVIEW)

See Consultant Manual Attachment E for details.

X. P/PMS TASK 3670 - DEVELOP MUNICIPAL UTILITY PLANS

See Consultant Manual Attachment E for details.

Y. P/PMS TASK 3675 - DEVELOP ELECTRICAL PLANS

See Consultant Manual Attachment E for details.

Z. P/PMS TASK 3821 - COMPLETE/REVIEW TRAFFIC SIGNAL PLANS

See Consultant Manual Attachment E for details.

AA. P/PMS TASK 3822 - COMPLETE PERMANENT PAVEMENT MARKING PLAN

See Consultant Manual Attachment E for details.

BB. P/PMS TASK 3823 - COMPLETE NON-FREEWAY SIGNING PLAN

See Consultant Manual Attachment E for details.

CC. P/PMS TASK 3824 - COMPLETE FREEWAY SIGNING PLAN

See Consultant Manual Attachment E for details.

- DD. **P/PMS TASK 3830 - COMPLETE THE CONSTRUCTION ZONE TRAFFIC CONTROL PLAN**
See Consultant Manual Attachment E for details.
- EE. **P/PMS TASK 3840 - DEVELOP FINAL PLANS AND SPECIFICATIONS**
See Consultant Manual Attachment E for details.
- FF. **P/PMS TASK 3850 - DEVELOP STRUCTURE FINAL PLANS AND SPECIFICATIONS**
See Consultant Manual Attachment E for details.
- GG. **P/PMS TASK 3870 - HOLD OMISSIONS/ERRORS CHECK (OEC) MEETING**
See Consultant Manual Attachment E for details.
The interval for plotting cross-sections and developing the grade book shall be 100 feet.
The intervals for critical areas shall be 25 feet.
- HH. **P/PMS TASK 5010 - CONSTRUCTION PHASE ENGINEERING AND ASSISTANCE**
The Consultant may be required to provide Design Services during the construction phase of this project. If Construction Assistance is required, then a separate authorization for those services will be issued.
- II. If excavation is required, submit the excavation locations which may contain contamination. Project Manager then can proceed in requesting a Preliminary Project Assessment (PPA).
- JJ. The Consultant shall be required to prepare and submit a CPM network for the construction of this project. See Attachment C for details
- KK. The Consultant representative shall record and submit type-written minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees. MDOT will provide and distribute official meeting minutes for the Base Plan Review Meeting (if meeting necessary) and The Plan Review Meeting.
- LL. Attend information meetings (i.e., public hearings, open houses, etc.) with the public and public officials to assist in responding to concerns and questions. May require the preparation of displays such as maps, marked-up plans, etc.
- MM. Prepare and submit electronically (native format or Adobe PDF) any information, calculations, hydraulic studies, or drawings required by MDOT for acquiring any permit (ie. NPDES, DEQ, etc), approvals (ie. county drain commission) and related mitigation. MDOT will submit permit requests..

- NN. Attend any project-related meetings as directed by the MDOT Project Manager.
- OO. The Consultant shall assist in the review of driveway and utility permit requests, incorporate the information in the design plans and respond within 2 weeks from receipt of the permit.
- PP. The MDOT Project Manager shall be the official MDOT contact person for the Consultant **and shall be made aware of all communications regarding this project.** The Consultant must either address or send a copy of all correspondence to the MDOT Project Manager. This includes all Subcontractor correspondence and verbal contact records.
- QQ. The Consultant shall contact the MDOT Project Manager whenever discoveries or design alternatives have the potential to require changes in the scope, limits, quantities, costs, or right-of-way of the project.
- RR. The Consultant shall attend and be responsible for scheduling biweekly progress meetings and shall provide minutes of the meetings. It is expected that the project manager, lead road engineer, lead bridge engineer, and any other staff identified by the Project Manager attend meetings where the subject matter warrants their expertise.
- SS. The Consultant's authorization will be held open until final deliverables are submitted. The Consultant shall perform any project letting package modifications necessary to update the project specifications and details between the time of plan completion and advertisement of this project. Any modifications needed to the plan completion package will have to be completed prior to **December 20, 2007**. The consultant shall manage all authorized hours to complete such modifications throughout the design process.

XIII. MDOT RESPONSIBILITIES (GENERAL)

- A. Schedule and/or conduct the following:
1. Project related meetings.
 2. The Plan Review
 3. Utility Meetings.
 4. Quantity summary sheets and final item cost estimates.
 5. Packaging of plans and proposal.
- B. Furnish Special Details and pertinent reference materials.
- C. Furnish prints of an example of a similar project and old plans of the area, if available.
- D. Supply information on existing pavement structure as necessary.

- E. Coordinate any necessary utility relocations.
- F. Furnish pavement core information (Consultant shall place information on plan sheets).
- G. Furnish soil boring information as necessary (Consultant shall place information on plan sheets).
- H. Pavement design
- I. Furnish FTP site for software download and instructions for the MDOT Stand Alone Proposal Estimator's Worksheet (SAPW).

XIV. CONSULTANT PAYMENT

All invoices/bills for services must be directed to the Department and follow the most current guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's Bulletin Board System. This document contains instructions and forms that must be followed and used for invoicing/billing; payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for Services Rendered shall not exceed the "Cost Plus Fixed Fee Not to Exceed Maximum Amount" unless an increase is approved in accordance with the contract with the Consultant. All invoices/bills must be submitted within 30 calendar days of the last date of services being performed for that invoice.

Direct expenses will not be paid in excess of that allowed by the Department for its own employees. Supporting documentation must be submitted, with the invoice/bill, for all billable expenses on the Project. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this Project. Hours spent in administrative, clerical, or accounting roles for billing and support are not considered allowable hours; there will be no reimbursement for these hours.

Reimbursement for overtime hours will be limited to time spent on this project in excess of forty hours per week (per person). Any variations to this rule should be included in the price proposal submitted by the Consultant and must have prior approval by the MDOT Project Engineer Manager.

The fixed fee allowed for this project is 11.0%.

ATTACHMENT A
CS 41131 - JN 51902C
US-131 at 44th Street – S06 of 41131
City of Wyoming, Kent County

BRIDGE SCOPE OF WORK
S06-41131; US-131 Under 44th St.

I. Description of Work:

Refer to the Description of Work in the road portion of this scope.

II. Consultant Responsibilities:

1. A complete design for the bridge at the above location. The design is to be done per LRFD specifications.
2. Preparation of both contract plans and bid item quantities.
3. Preparation of any specifications and/or special provisions required to supplement MDOT's Standard Specifications for Construction.
4. Soil borings of sufficient depth and number and a geotechnical analysis to perform the foundation designs. For scope of work statement for geotechnical services, see Appendix 5.03.03 A.1.e MDOT Bridge Design Manual.
5. Preparation of permit requests. (MDOT will submit these).
6. Necessary contacts with concerned agencies: eg. DEQ, municipalities, utilities, railroad, State Historic Commission. All contacts are to be documented. MDOT is to receive copies of minutes, record of conversations or memos documenting all contacts.
7. Participation in meetings and field reviews at the site.
8. Solutions to any unique problems, e.g. utility interference, staging for part width construction.
9. With concurrence from District Traffic Engineer, provide plans and specifications for maintaining traffic during construction.
10. With concurrence from MDOT district traffic engineer, provide traffic control to permit the work described in item 4 & 12.
11. Prepare and submit any information, calculations, hydraulic studies, or drawings required by MDOT for acquiring permits (ie. NPDES), approvals (ie. county drain commission) and related mitigation. MDOT will submit permit requests.

12. Prepare structure aesthetic treatment plans for all bridge and/or walls.

12. Any pickup survey or field measurements required to supplement the data provided by MDOT. See survey attachment.

The consultant shall be responsible for the following PPMS tasks.

P/PMS TASK 3370 - PREPARE STRUCTURE STUDY

P/PMS TASK 3530 - CONDUCT FOUNDATION STRUCTURE INVESTIGATION

P/PMS TASK 3570 - PREPARE PRELIMINARY STRUCTURE PLANS

P/PMS TASK 3850 - DEVELOP STRUCTURE FINAL PLANS AND SPECIFICATIONS

P/PMS TASK 3870 - HOLD OMISSIONS/ERRORS CHECK (OEC) MEETING

Work shall conform to current MDOT, FHWA, and AASHTO practices, guidelines, policies, and standards (i.e., Roadside Design Guide, A Policy on Geometric Design of Highways and Streets, Michigan Manual of Uniform Traffic Control Devices, etc.).

The plans shall be submitted to MDOT as follows:

1. A study showing the conceptual design. This shall be accompanied by a rough (square foot) estimate of cost. This is subject to MDOT and FHWA approval.
2. Preliminary Plans consisting of a General Plan of Site and a General Plan of Structure of the proposed work and Log of Boring. Preliminary Plans shall be accompanied by an estimate of cost based on the quantities of major pay items shown on the plans.
3. Prefinal (Pre-OEC) plans consisting of final plans that are approximately 95% complete and any special provisions and supplemental specifications that may be required.
4. Final plans and Contract Quantities and any special provisions or supplemental specification that may be required.

The consultant is not authorized to proceed with Preliminary Plans until he receives MDOT approval of the Study. Neither is he authorized to proceed with Final Plans until notified that the FHWA has approved Preliminary Plans.

All work shall conform to AASHTO specifications and MDOT specifications and MDOT design and detailing practices. All submittals to MDOT shall meet the attached quality assurance document. The Consultant shall maintain office records, submit monthly progress reports, and submit MDOT vouchers with their billings. The consultant is advised that MDOT considers

plans 5% complete upon approval of the study, 30% complete when the preliminary plans are distributed, and 95% complete when Pre-final plans are submitted for review, and 100% complete at the time of final review (OEC)

The consultant is to show the location and names of all existing utilities within the limits of the proposed work. The consultant will attend any utility meetings called to insure that the concerns are addressed on the plans involving utilities.

All submittals to MDOT shall be dated and identified by structure number, control section, job number including phase, MDOT contract number, route and location.

All minutes for project related meetings shall be typewritten, recorded, and submitted within two weeks of the meeting.

A file containing project related correspondence, design, and any information resulting from research shall be submitted to MDOT with the final plans for turn-in.

ATTACHMENT “B”

SCOPE OF WORK for PROFESSIONAL DESIGN SURVEY SERVICES

US-131 at 44th St. (S06 of 41131) Interchange, City of Wyoming, Kent County

DATE: February 16, 2006

JOB NUMBER: 51902C

CONTROL SECTION: 41131

PREQUALIFICATION CATEGORY:

Road Design Survey PPMS Task 3330

Structure Survey PPMS Task 3340

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION:

As defined in design scope of work.

MDOT TEAM:

Any questions regarding this scope of professional design survey services may be directed to the MDOT Project Manager as defined in the original design scope of work.

DESIGN SURVEY SCOPE WHEN USED AS AN ATTACHMENT:

This design survey is an attachment to the original design scope of work but serves and will be submitted to MDOT as a stand alone Professional Design Survey, as outlined in the Design Survey Standards and Practices dated April 1, 1998. Design survey man and task hours for this project must be reviewed and/or discussed with the Region Surveyor through the MDOT Project Manager prior to finalizing the cost proposal. A copy of the design survey portfolio, in digital and hard copy format, must be submitted to the Region Surveyor when the survey is complete according to the project timelines set forth in the original design scope of work. Early submittals of the project control, horizontal and vertical least squares adjustments are encouraged as soon as the consultant surveyor finishes the task.

DESCRIPTION OF WORK:

Provide professional surveying services for a proposed Single Point Urban Interchange (SPUI), ramp accel/decel lane lengthening, bridge replacement/widening/lengthen, and storm sewer modifications at US-131 and the 44th Street Interchange. Full topography mapping, extending to the ROW, will be required from 2000 feet south of 44th Street northerly to 36th St. along mainline US-131. Full topography mapping, extending to the ROW, will be required for 500 feet east & west of US-131 along 44th Street. Hard surface roadway mapping and the alignment should extend an additional 500 feet beyond the full topo limits on either

side of 44th Street. The survey is to include the MDOT owned detention basin in the northeast quadrant of the intersection.

The survey must include locations and elevations on all lane lines, edge of metal, edge of bit, shoulders, and break lines in the above project limits. Cross-sections are required to be taken at 50-foot intervals in a horizontal or vertical curve and 100-foot intervals along the tangents along mainline US-131. Cross sections along the ramps should be taken at 25 foot intervals extending to the MDOT ROW on the outside and including the area between the ramp and mainline pavement on the inside. Cross sections on the structure approaches should be taken at 25 foot intervals.

This project will require a LEGAL ALIGNMENT, past planned construction alignments, and existing centerline alignments for US-131 and 44th Street throughout the above project limits. The intent of this alignment section is to provide a legal alignment to reference the MDOT ROW and also provide a construction alignment that matches the existing centerline/lane lines that can be used to facilitate the proposed design. All government section corners in the project limits must be conspicuously described on the survey drawing and in the project surveyor's report.

Locate all permanent signs, guard rail and trees (trees include size & species) within the project limits. Tree lines may be used to depict the locations of all dense areas of trees. Locate all existing utilities including culvert pipe sizes, types, and inlet/outlet elevations. All major culverts must include a cross-section at the face of the culvert and another cross-section 50 feet away upstream and downstream on each side of the culvert. Locate buildings and parking lots that may be impacted by vertical or horizontal geometric changes. Locate railroad tracks at cross roads, if present.

Bridge underclearances specifying the minimum vertical distance between the bottom of bridge beam and the mainline line pavement, lane lines, edge of metal, and shoulder, will be required at the 44th Street structure. The intent of these underclearances is to provide the minimum vertical distance between the roadway and the structure above. Therefore, a thorough investigation should be conducted to insure that this minimum vertical distance is accurately reported.

RTK GPS may be used for mapping provided sufficient check measurements are taken frequently throughout the day, every day, to ensure that the survey accuracy is met according to the MDOT Survey Standards of Practice dated April 1, 1998. All check shots are to be stored in CAiCE as to serve as a permanent record of a check on that day's data. A RTK GPS Check Shot Report is to be supplied in the mapping portion of the final project portfolio detailing the date, time, coordinates, and differences between the check shot and the adjusted project control coordinates. A discussion between the Consultant Surveyor and the MDOT Region Land Surveyor detailing the GPS methods and procedures proposed by the Consultant for this project must take place prior to beginning work.

The Consultant will be required to determine and compute the existing MDOT ROW throughout the project limits, as needed, to aid in the design process and the purchase of real estate for this project. The Consultant will be responsible for miscellaneous staking of utilities, existing ROW & proposed ROW, proposed ramp centerlines, and soil borings that may be needed to resolve potential conflicts, aid in the purchase of real estate, define the MDOT ownership, secure grading permits or otherwise bring to light a potential conflict. MDOT will provide monument caps (plastic caps to fit a #5 rebar) and/or ROW markers (carconite MDOT ROW posts) to the Consultant for use on this project. This project may require additional survey pickup to supplement the original design survey if the MDOT Project Manager deems necessary. This miscellaneous survey pickup may or may not be needed and is contingent on the design needs for this project. Consultant work hours and priced proposals should reflect the above project tasks.

This project will require the coordination of an existing survey completed by the City of Wyoming for a project east and west of US-131 along 44th St. MDOT will provide the existing survey data to the Consultant for their use on this project. It is believed that the City of Wyoming's survey will be on a different coordinate system than the MDOT survey and the Consultant will therefore need to adjust (scale/rotate/translate) the data to match the existing MDOT survey's coordinate system and vertical datum.

EARLY SURVEY SUBMITTAL:

This project will require the Consultant to submit their horizontal and vertical control & least square adjustment reports immediately after the task is completed for review and approval by the MDOT Region Surveyor and before beginning the mapping portion of the project. Once the survey project is complete and before design files are sent to engineering the completed survey portfolio must be submitted to the MDOT Region Surveyor for review and approval. The MDOT Region Surveyor will either approve or request revisions, in writing, within 5 working days after each submittal. Survey submittals should be sent to:

MDOT Grand Region Office
Attn: Region Land Surveyor
1420 Front Ave. NW
Grand Rapids, MI 49504

PROJECT TIMELINE:

As defined in the original design scope of work.

NOTES:

The consultant surveyor shall discuss the scope of this survey with the MDOT Region Land Surveyor before initiating any work on this project.

It is the responsibility of the Professional Surveyor to safeguard all corners of the United States Public Land Survey System, published Geodetic Control and any other Property Controlling corners that may be in danger of being destroyed by the proposed construction project. These corners must be readily identified and detailed in the property section in the surveyor's report.

GENERAL REQUIREMENTS:

1. Surveys must meet all requirements of the Michigan Department of Transportation (MDOT) Survey Standards of Practice dated April 1, 1998. Please contact the Grand Region Design Survey office to clarify any specific questions regarding these standards.
2. Consultants must obtain all necessary permits, including an up-to-date permit from the MDOT Utilities Coordination and Permits Section, required to perform this survey on any public and/or private property.
3. Prior to surveying within the roadway, the consultant must contact the Regional Traffic and Safety Engineer or Transportation Service Center (TSC) about potential work restrictions regarding lane closures and work time limitations.

4. The consultant must adhere to all applicable OSHA and MIOSHA safety standards, including the appropriate traffic signs for the activities and conditions for this job.
5. Consultants are responsible for a comprehensive and conscientious research of all records essential for the completion of this project.
6. Surveys must comply with all Michigan law relative to land surveying.
7. Surveys must be done under the direct supervision of a Professional Surveyor licensed to practice in the State of Michigan
8. Measurements, recorded data, and computations must be in INTERNATIONAL FEET.
9. Coordinate values shall be based upon the Michigan State Plane Coordinate System, South Zone (2113), NAD 83(CORS96) and referenced to the Michigan Spatial Reference Network. Elevations must be based upon the North American Vertical Datum of 1988 (NAVD 88).
10. Two complete sets of survey notes must be submitted to the Grand Region Design Survey Department in 10" by 12" divided portfolios with flap covers (Oxford Expanding Wallet #1373GL-OX or equivalent; size requirement facilitates storage in MDOT Record Center). Please use as many portfolios as needed to contain all of the required documents and diskettes. Note that different Survey Categories such as Road, Bridge, Hydraulic, etc. should be compiled and submitted in separate portfolios. Data may be duplicated and shared among surveys, but the survey submittals should be self supporting as separate surveys and should not rely upon data in another survey.
11. Each portfolio must be labeled on the outside as per the following example:

Survey Notes for:

Location and Project Limits: [Project Name]

Control Section [#####] Job Number [#####] Date [of submittal]

By [Name of Firm]

Michigan Professional Surveyor [Name, PS]

12. Each portfolio is to be divided into six sections. These sections are to be labeled as follows: Administrative, Control, Alignment, Property, Mapping, and Miscellaneous. Below is a list of items to be included in the project portfolio, please refer to the deliverables section of this scope for additional detail.
 - A. The Administrative section will include the following items:

- A completed copy of the MDOT Form 222 entitled "SURVEY NOTES: RECEIPT AND TRANSMITTAL".
- The original survey scope.
- A comprehensive table of contents.
- A complete synopsis (Project Report) of the survey that shall include, but not be limited to:
 - Horizontal and vertical control datum's used.
 - A discussion of government corners recovered, perpetuated or otherwise

- used as part of the survey.
 - Any problems encountered.
- A statement of certification from the consultant surveyor supervising the project as to compliance with Michigan Department of Transportation (MDOT) Standards of Practice dated April 1, 1998.
- As well as any documentation with respect to any project specific meetings and /or conversations with MDOT Survey personnel including an explanation of any deviation from the scope and Standards.
- Also included in the administrative section shall be a copy of the Survey Project QA/QC Check-off list, a copy of which is included as Appendix SUR3 of this scope. This document shall be signed and certified by the Professional Surveyor responsible for the project. It is highly recommended that the consultant become familiar with this document prior to preparing the proposal and again prior to assembling the final portfolio. Failure to use and include this document shall result in the immediate return of the project portfolio for completion.

B. The Alignment section will contain:

2.

- A sketch of the alignment(s).
- A list of coordinates, witnesses and stationing of alignment points set or found, and PI's with deflection and curve data
- An explanation of how the alignment(s) were determined, whether best fit or legal, and all supporting documentation.
- Station, bearing and distance ties to Government Corners along the Section Line.
- A brief discussion of how the project stationing was determined. Stationing shall typically run from South to North or West to East.

This information must be submitted on printed 8.5" x 11" sheets as well as in ASCII electronic file format on Compact Disc (CD).

C. The Control section will contain:

Copies of the documents used to establish the horizontal and vertical reference systems for the project. This includes a thorough written explanation describing how the coordinate systems were established.

This section should also contain:

1. Control traverse raw data, and least squares analysis for both horizontal and vertical control.
2. A control point list that shall include horizontal datum, and, for each point, N,E,Elev, Desc. coordinates with standard error, four witnesses, station and offset and scale factors if appropriate.
3. A complete Benchmark list with datum, elevation, description, and station and offset of each benchmark.
4. A sketch of the control traverse, showing any ties (government corners, property,

alignment, etc.) shall also be included in this section. This sketch may be combined with the alignment sketch.

This information must be submitted on printed 8.5" x 11" sheets as well as in ASCII electronic file format on Compact Disc (CD). Please refer to Appendix SUR1 of this scope.

- D. The Property section contains all information that is gathered regarding the real property affected by the project, and all necessary property ties. This will include:
 - 5. Copies of all recorded Land Corner Recordation Certificates for the government corners used, reestablished, or in danger of obliteration by impending road construction.
 - 6. Recorded plats, recorded certified surveys, tax maps and tax descriptions listing owners and addresses.
 - 7. Witnesses and Coordinates for Government Section Corners located in this survey in accordance with Appendix SUR1 of this scope.
- E. The Mapping section shall contain:
 - 8. All survey notes, research documents, and collected data used to produce the maps necessary for this project
 - 9. All plots and diskettes for topography.
 - 10. Utilities and drainage information.

NOTE: Hard copy of Radial Topographic coordinate data shall NOT be submitted.

- F. The Miscellaneous section contains any information not included in the previous
- 13. All sheets in a portfolio must be marked with the control section, job number, section number and page number. CD's must be labeled with the control section, job number, data type and file names.
 - 14. The following information is to be submitted on Compact Disc (CD):
 - a. Text files, in ASCII format, containing the witness lists for the horizontal alignment ties, horizontal control points, bench marks, and government corners, as described herein.
 - b. Any other text files are to be in either ASCII or RTF (Rich Text Format).
 - 15. Documents are to be submitted as follows:
 - a. All recorded instruments on 8.5" x 11" or 8.5" x 14" sheets as appropriate.
 - b. All text files printed on 8.5" x 11" sheets.
 - c. All recorded plats and condominiums on 18" x 24" sheets.
 - d. All plots on 24" x 36" sheets.
 - e. All documents and plots are to be legibly printed or reproduced on white paper.
 - 16. The Consultant representative shall record and submit type-written minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees.

17. The MDOT Project Manager will be the official contact for the Consultant. The Consultant must either address, or send a copy of all correspondence to the MDOT Project Manager. The MDOT Project Manager shall be made aware of all communications regarding this project.

Any questions regarding to this project should be directed to Grand Region Land Surveyor.

At the completion of this survey, all original field survey notes, all electronic data, and all research records obtained for this project will be considered the property of MDOT and must be sent to: MDOT, Design Division, Supervising Land Surveyor, 1420 Front Ave. NW, Grand Rapids, MI 49504. Please use MDOT's Form 222 entitled "SURVEY NOTES: RECEIPT AND TRANSMITTAL" for all transmittals. NOTE: It is recommended that the project's horizontal and vertical control adjustments be submitted for review as soon as it is available.

PAYMENT SCHEDULE

Compensation for the professional design survey services shall be consistent with the original design scope of work.

MONTHLY PROGRESS REPORT

The monthly progress report shall be consistent with the original design scope of work.

FIELD SURVEY

The purpose of this field survey is to obtain information and/or data required by the project scoping engineer, to leave horizontal and vertical control in the field for future construction staking, and to provide a sufficient history of the area to enable the MDOT Design Survey Unit to perform dependable surveys in the future.

The field survey must include, but is not limited to, the following:

ALIGNMENT

A legal alignment must be established for US-131 and 44th Street throughout the above mentioned project limits. Establishing the plan centerline alignment determines the legal limit of the right-of-way as defined by and described from its centerline. Right-of-way plans, previous construction plans, existing monumentation, physical centerline both present and underlying, and other recorded information are to be used as guides to the proper location of the legal centerline. All evidence must be evaluated to determine the legal alignment. The method used to establish this alignment must be clearly explained in the surveyor's project report. All data used to determine the alignment, as well as a sketch of the alignment, must be included in the submitted survey notes. This alignment, with the stationing marked and labeled, is to be shown on the topographic map submitted for this project. All measured angles, distances, and curve data must also be reported where applicable. Alignments of all side streets must be tied to the project legal alignment.

At least two alignment control points must be found or set and witnessed on each tangent. These points must be intervisible and not be more than one kilometer apart. The alignment points may be set on an offset to the true alignment. If this is done, the witnesses must include the offset distance and the project surveyor must certify that the line is a true parallel offset. The project surveyor must provide a sufficient number of primary and intermediate control points to allow staking of the computed alignment without additional traversing by construction survey crews. The alignment notes must include the state plane coordinates and at least four witnesses for each alignment control point set or found.

The consultant must include a sketch or CADD drawing of the alignment in the portfolio, showing stationing, horizontal coordinates, curve data (Radius, External, Tangent length, PC station, PI station and PT station), alignment points found or set, and the basis from which the project stationing was determined.

CONTROL

HORIZONTAL CONTROL

A three dimensional coordinate system must be established for this project based on NAD83(CORS96), Michigan State Plane Coordinates, South Zone (2113) in International Feet Units. The primary control should be based on the NGS's Online Processing User System (OPUS) coordinate system with a minimum of 2 hours of occupation time. The OPUS provided coordinates are to be verified by downloading the MDOT CORS data used by OPUS and manually processing the baselines to the primary control points. A fully constrained least squares adjustment is to be performed and resulting coordinates checked against the OPUS provided coordinates to within 0.25 feet.

GPS

Rapid static GPS techniques may be used, according to the MDOT Standards and Specifications, dated April 1, 1998, to tie the secondary project control to the primary control with a strong geometric network design consisting of independent baselines and a high degree of redundant measurements. One simultaneous network adjustment should be performed and the results scrutinized for accurate reporting of the final coordinates, baselines, and error estimates. All statistical information is to be reported at the 95% confidence interval.

CONVENTIONAL TRAVERSE

In the event that GPS control is not practical or desirable due to tree canopy, buildings, or other undesirable GPS conditions a closed traverse must be run and adjusted between two or more known control points on the project. Open traverses are NOT acceptable. Unadjusted traverse measurements must produce an error of closure of not greater than 1:20,000. Any permissible error of closure shall be distributed throughout the traverse by means of a suitable least squares adjustment software program. These points must not be set greater than 1320 ft or less than 450 ft apart, semi-permanent in nature, and located outside the proposed construction area to insure their availability for all phases of construction. All data collection traverse points and the plan centerline alignment must be tied to the control established for this project.

The horizontal project control for this project will be classified as intermediate project control according to the MDOT Standards of Practice dated April 1, 1998. These control points are intended for mapping and should be located outside the proposed construction area to insure their availability for all phases of construction. Each control point must be accurately described and witnessed to at least four nearby features. Please refer to MDOT Standards of Practice for the minimum requirements for these points.

Upon request, the MDOT Design Survey Unit will supply descriptions of nearby published NGS control stations. Each NGS horizontal control station or bench mark used for this project shall require a complete history and a recovery description with new witnesses, in DDPROC format, which must be included in the final report submitted to the MDOT Design Survey Unit. The DDPROC program is available through the National Geodetic Advisor located in the MDOT Lansing Design Survey office. The requirement for NAD83 may be waived by request to Survey Project Manager.

All field observations, unadjusted traverse computations and final adjusted coordinates must be included in the notes. A list of all horizontal control points must be developed which includes datum, point designations, descriptions, horizontal coordinates with standard errors, station and offset, witnesses and appropriate scale factors. This list must be printed on 8.5" x 11" sheets and placed on CD in ASCII format. All data relating to the horizontal component of the system must be included in the control section of the portfolio.

VERTICAL CONTROL

The vertical component of this project must be based upon the North America Vertical Datum of 1988 (NAVD 88). The vertical least squares adjustment statistics must be reported at the 95% confidence level.

Upon request, the MDOT Design Survey Unit will supply descriptions of nearby published NGS control bench marks.

New bench marks must be set on massive structures outside the proposed construction area. Each bench mark must be accurately described and its horizontal position referenced by measurement from a horizontal control point and by station plus and offset from the alignment stationing.

Intermediate Vertical Control for project bench marks shall meet an unadjusted error of closure between known bench marks of not more than 12 millimeters times the square root of the distance between the marks in kilometers. Any error of closure must be distributed throughout the level runs by means of a suitable least squares adjustment software program. Open level loops are NOT acceptable.

The bench mark notes must include all field observations, the unadjusted loop closures and the final adjusted elevations. A bench mark list must be developed that includes datum, bench mark designations, descriptions, elevations, and station and offset (left or right) out from centerline. This bench mark list must be printed on 8.5"x 11 sheets and placed on CD, in ASCII format. All data relating to the vertical component of the system must be included in the control section of the portfolio.

The methods used to establish the horizontal and vertical components of the project coordinate control system must be fully discussed in the Surveyor's Project Report.

PROPERTY

GOVERNMENT CORNERS

Any Public Land Survey System (PLSS) corners within the project construction limits must be recovered or established and tied to the project coordinate system. Any PLSS corners needed to establish the alignment are required, as are any PLSS corners in danger of obliteration by impending road construction.

All PLSS corners must be verified to the Professional Surveyor's satisfaction and recorded in accordance with PA 74 of 1970, as amended, and all applicable administrative rules. Four valid witnesses must exist in the field, or a new LCRC with four valid witnesses must be filed. All PLSS corners located in hard surface roads must be protected by a monument box, regardless of impending construction. It shall be the responsibility of the Project Surveyor to coordinate all such activities with the County Remonumentation Representative(s).

All PLSS corners located as part of this survey are to be documented in an ASCII file consistent with Appendix SUR2 of this scope. Witnesses should be consistent with the appropriate LCRC.

MAPPING

Project deliverables will include an Intergraph MicroStation, version 8 (.DGN) format 2D planimetric map for the area within the mapping limits in both hardcopy and electronic format. A corresponding three dimensional MicroStation, version 8 (.DGN) triangle file and Geopak (.XYZ) and (.OBS) files along with a fully edited CAiCE archive (.zip) file. These files must be created with the current MDOT English seed and cell files. Current MDOT symbology must be used exclusively as supplied in Appendix "SURV1". Survey data shall be displayed, with the appropriate descriptive attributes, as noted in

Appendix “SURV1”.

Mapping Scale: 1”=40’

The Consultant is encouraged to use the latest MDOT Tugboat to produce the final project deliverables.

The surveyor or CAiCE/CADD technician is expected to use due judgment in the event of necessary deviations from this standard. Survey chains (line items) will be processed and edited so as to be displayed as lines and smooth curves as appropriate and displayed at the requested scale with the appropriate pattern. All descriptive text shall be arranged such that text shall not overwrite each other. The delivered product should be legible and professional in appearance and portray an accurate representation of existing field conditions. As there are many variations in standard practices throughout the industry, it is recommended that the consultant refer to the attachments and the MDOT Design Division Plans Preparation Guidelines for additional information regarding such things as font size, display attributes, symbology, levels, etc., to be displayed in the submitted planimetric file. Questions or confusion should be immediately brought to the attention of the MDOT Project Manager for clarification.

Tree descriptions shall include species type and trunk diameter, in inches, 4 ft above the ground; Culvert type, size in inches and flowline elevation; Brush and wooded areas should be outlined and classified as to average size and density. Additional information that should be noted is surface materials, changes in surface materials, curb detail (profile type), ditch type (e.g. 2 ft round bottom), contours on the appropriate level and interval, building or mailbox addresses and other noteworthy items. This information may be included on the CADD file (on the proper level), or handwritten on a field verification plot. The plots will be submitted as described under the section of “Final Reports”.

A Digital Terrain Model (DTM) will be created from the appropriate terrain data. This model will be created, using the CAiCE terrain modeling format. It shall be checked for accuracy and edited as necessary to provide a true representation of the existing terrain. All triangles in the triangulation network that fall outside of the limits of this survey, or are deemed inappropriate in the judgment of the surveyor, are to be obscured so as to have no effect on cross-sections, contours and profiles developed from the model. These would include triangles which have legs so long as to cross areas that contain no survey data. Contours are to be generated from the Digital Terrain Model (DTM), to depict the site conditions for this project and plotted as noted above.

A statement, similar to the following, must be affixed to each sheet of all plots which certifies to the map’s accuracy and signed and sealed by the project surveyor:

I hereby certify that this map has been developed from survey data collected, and that accuracy standards are in accordance with the MDOT Design Survey Standards. This map correctly represents the existing conditions at the time the survey was completed.

All plots must be clearly defined and legible. An illegible plot will not be acceptable.

UTILITIES

All surface manifestations of utilities within the project area must be identified and their location tied to the project’s horizontal coordinate system. A list of all utilities within the project limits must be submitted on CD as well as on a printed list. This list must include the feature name of each utility, its

horizontal coordinates and elevation, and station and offset. A CAICE station and offset report will satisfy this requirement.

It may be necessary for the consultant to obtain as-built plans from each utility in the project area, and submit them with the name of utility, address, phone number, and contact person listed. Please check with the MDOT project Manager as to the necessity of this as this information may be available through MDOT.

DRAINAGE

The consulting firm is required to contact all local officials necessary to obtain all surface and subsurface drainage information regarding the project. The consultant must also ask the local officials about any known drainage problems within the project area and report their findings, as well as any observed drainage problems in a separate drainage report.

The following information is required for all surface and subsurface drainage:

3. The type, size, condition, location, station, offset, surface and bottom or invert elevation of each drainage structure and culvert. This information must be printed on 8.5" x 11" sheets and submitted on CD in ASCII format.
4. Descriptions of underground drainage structures shall include: description and type of structure, type of system (storm, sanitary, etc.), description or type of structure cover, size, type, invert elevation and direction of each pipe leading into or out of the structure.
5. Culvert descriptions shall include size, type, invert elevation and end section treatment. Condition of culvert should include: horizontal and vertical misalignment, visible damage, rust, infiltration and amount by which it is filled with dirt and debris, if any.
6. The location of all catch basins, manholes, and cross culverts must be shown on the topographic map. It may be necessary to prepare a separate plot to clearly show the surface drainage systems. Underground sanitary and storm systems must be mapped to show the connectivity of the structures. This may be added to the CADD file or hand sketched and submitted on a separate topographic plot made specifically for this purpose.

All plans and maps obtained from local officials are to be submitted as part of the final report. Information regarding any drainage problems from local officials, residents, or the consultant's observations must be documented in a separate drainage report.

This section will contain sections for all topography, elevations, surface/subsurface utility locations, and surface/subsurface drainage, including all cross culverts.

MISCELLANEOUS

Any information that would not be appropriately placed in the control, property or mapping sections should be included in this section. General photographs, local newspaper articles and project-related comments from residents are examples of miscellaneous data.

The surveyor must describe, in the final report, the data included in this section.

FINAL REPORT: Two complete sets

The final report for this project shall include the following:

In the first pocket of the portfolio(Administrative):

- MDOT's Form 222 entitled "SURVEY NOTES: RECEIPT AND TRANSMITTAL"
- MDOT QA/QC Check-off sheet, completed, signed and sealed.
- The project's Professional Surveyor's Report on company letterhead consisting of the following:

A comprehensive synopsis, signed by the project's Professional Surveyor, of the work performed on this project.

- The source and the methods used to establish the project horizontal control, elevations, alignment(s) and stationing for this project.
- A detailed explanation of anything discovered during the survey that may create a problem or be of interest to for the design engineer or another surveyor.
- MDOT authorization letter
- Copy of the scope of work
- Copy of proposed work schedule
- Any correspondence (change of scope, change of schedule, records of phone conversations, etc.)
- All Project files archived on 88.9 mm (3.5") HD Diskettes or Compact Disc (CD) including:
- **CAiCE archive (.zip) with digital terrain model (DTM) that has been appropriately edited and verified.**
- A MicroStation, version 8 drawing file (.DGN). The format for the drawing file shall conform to all MDOT drafting standards pertaining to working units, global origin, features display, layer/l assignments, standard line weights and colors, standard text assignments, standard fonts, and MDOT cell library assignments as listed in Appendix SUR1 of this scope.
- All required ASCII files or Word documents, reports, lists, etc.

7.

8. In the second pocket (Control):

- Least squares adjustments for the horizontal and vertical control: GPS/traverse

adjustment; level adjustment report showing mm error per $\sqrt{\text{km}}$.

9.

- Control Point witness list with datum, point number, coordinates with Std. Errors, witnesses, station-offsets and appropriate scale factors.
- Benchmark List with datum, descriptions, elevations, station-offsets.
- GPS/traverse adjusted coordinates with standard errors.
- Sketch or plot of network or traverse.

10.

- NGS or MDOT data sheets of existing control and benchmarks
- DDPROC - .ha files printout

11. In the third pocket (Alignment):

- A sketch or CADD drawing of the alignment with stationing, horizontal coordinates, curve data, alignment points found or set, and a station equation to existing stationing in feet.
- Control sketch with control points, government corners and alignment plotted.
- A report discussing in detail how the alignment was determined.
- The witness list with description and coordinates for the alignment points found or set.

In the fourth pocket (Property):

- Copies of all LCRCs used for the project
- Government Corner list with corner names, coordinates and 4 witnesses consistent with Appendix SUR2 of this scope. This list should clearly indicate which corners are in danger of destruction due to impending construction.
- Section Corner ties to the alignment with station, distance and bearing along the section line.
- Section map with bearings, distances between Government corners.
- Copy of submittals to county Remonumentation (if required)
- Copies of all research documents, tax maps, tax descriptions, deeds, recorded plats, surveys, etc.
- A separate plot of alignment showing all property irons found.
- A station-offset listing of property irons.

12. In the fifth pocket (Mapping):

- A legible planimetric plot, including contours, of this project on the required sheet size and utilizing the most recent MDOT Design Division Feature Codes and Cell Library. Please refer to Appendix SUR1 for Feature Code display criteria. The centerline alignment(s) must be shown on this plot.
- A second planimetric plot that shall legibly show all surface materials, utility connectivity and other pertinent notes or comments.
- The consultant is responsible for verifying all plots by a field inspection. Each plotted sheet must have the statement specified in the Standards of Practice for MDOT Design Surveys dated April 1, 1998 affixed to it. Each sheet must also be signed and sealed by a resident Professional Surveyor licensed in the State of Michigan which certifies to the accuracy of the plots.
- All field survey notes, all electronic data, and all research records obtained for this project. It is not necessary to submit raw survey data in hardcopy form, electronic format will suffice.
- Drainage structure inventory that shall be correlated to the structures shown on the planimetric map and will include all pertinent data about the structures: Station and offset, coordinates, structure name, rim elevations, invert depths with corresponding computed invert elevation, pipe sizes, directions, structure cover type, complete culvert information, etc.
- Drainage Report.
- Legible copies of the plans for all utilities located within the limits of this project, and a list of all utilities with installations within the project area, noting utility name, address, phone number and contact person.

In the sixth pocket (Miscellaneous):

- \$ Field books - numbered and marked with CS, JN, date
- \$ Miscellaneous documents such as newspaper articles, general correspondence.
- \$ Any reports or materials pertinent to the project survey not included in the other sections of the portfolio.

It is the responsibility of the consultant to insure that all electronic files submitted to MDOT conform to the required format, and that all documents are legible.

13. The consultant must organize and label the various sections of the portfolio as required by the Standards of Practice for MDOT Design Surveys dated April 1, 1998.

APPENDIX SUR1
Formerly Attachment AA, C & D
For MicroStation V8

For a comprehensive list of level designations, contents and line attributes, refer to the “MicroStation V8 Survey Data Collection Level Names & Survey Feature Codes” table located on the ftp site. The consultant password is \$urvcon\$. The file to retrieve is located in the following path:

[/V8files/Features/V8GROUP_ALPHA_LIST.PDF](#)

The referenced table replaces the former Attachments AA, C & D.

APPENDIX SUR2

*****EXAMPLE*****

*****EXAMPLE*****

Mandatory ASCII format for control point, alignment point, and government corner witness lists, and benchmark list.

1. Files must be generated exclusively in ASCII Text format, in a program such as Notepad or Wordpad. Conversions from Rich Text Format, WordPerfect, etc. are not acceptable.
2. Do not use TABS to space text. Use spaces only.
3. Use normal keyboard keys for fractions. (Ex: 1/2")
4. For special characters use only the following MDOT Design Font Zero keyboard keys.
5. Data must be organized as shown in the example below:

CONTROL PT#: CP660

DESCRIPTION: Set .5/8" x 3ft rebar and yellow S&W cap in south edge of M-95 gravel shoulder, and 150 ft East of Boilermaker Dr. to south.

Station 4+738.271, Offset 6.900ft Right

COORDINATES: N - 124677.7232 E - 4033287.8125 Elev - 272.145 ft

WITNESSES:

- 1. NORTH 6.844ft of E-W Edge of Metal of M-65*
- 2. SOUTH 1.838ft North edge of concrete base of "West Lafayette City Limits" sign*
- 3. S84°W 47.811ft Set nail & S&W tag in north face of power pole*
- 4. S43°E 13.356ft Set nail & S&W tag in S.W. face of 24in White Maple*

6. Data must be able to be imported directly into MicroStation, while retaining basic structure and showing proper symbols such as degree and centerline.

APPENDIX SUR3

MDOT QA/QC Certification Check List

The purpose of this checklist is to insure that critical items are checked prior to submitting the project for review and acceptance. The proper use of this document should drastically reduce the amount of time spent by MDOT and Consultant personnel correcting oversights and omissions from the project. The last page of this list is to be used to provide a brief explanation of why an item is being omitted. If a particular item is not applicable simply check NA, no explanation is necessary. **Failure to complete and include this list with the final project portfolio will result in the immediate return of the portfolio for completion.**

**NOTE : Be sure that the latest CAiCE files and Tugboat from the MDOT FTP site are utilized.
Be sure that the latest PDF requirement is accomplished.**

X NA **Portfolio:**

____ ____ Two complete sets of survey data have been compiled for delivery.
____ ____ Portfolio labeled as per Scope.

Portfolio Pocket Contents:

Administrative

____ ____ The MDOT Survey Contact is _____.

____ ____ MDOT QA/QC Certification Check List
____ ____ MDOT transmittal form 222
____ ____ Comprehensive project survey report. Also, include a synopsis of the
report that pertains to that section in the front of each pocket.
____ ____ MDOT authorization letter
____ ____ Copy of scope of work
____ ____ Copy of proposed work schedule
____ ____ All correspondence
(change of scope, change of schedule, phone records etc.)
____ ____ All digital Project files archived with subdirectories matching each
portfolio pocket on Compact Disc (CD) including:
CAiCE archive (.zip), MicroStation drawing file (.DGN)
____ ____ All required ASCII files or Microsoft Word documents.

Control:

____ ____ Control point List with:
Datum __, Description __, Coordinates with Std. Err. __, station offsets __, Scale
Factors __, witnesses __.
____ ____ Bench Mark List with:
Datum __, Descriptions __, Elevations __, station offsets __.

____ ____ G.P.S./traverse adjusted coordinates with standard errors
____ ____ Horizontal and Vertical Least Squares Adjustments

_____	_____	Level adjustment report, showing to the hundredth of a foot,
_____	_____	___ 0.06ft error per Mi
_____	_____	___ 0.04ft error per Mi
_____	_____	Sketch or plot of network or traverse
_____	_____	NGS or MDOT data sheets of existing control
_____	_____	DDPROC .ha files printout, or copy of Mark Recovery Form submitted
_____	_____	on the NGS website

Alignment:

_____	_____	A sketch or CADD drawing of the alignment with: stationing __, horizontal coordinates __, curve data __, alignment points found or set __, source of stationing __.
-------	-------	---

_____	_____	Control sketch with control points, government corners and alignment plotted.
-------	-------	--

_____	_____	A report discussing in detail the type of alignment, source of the stationing and how it was determined.
-------	-------	---

_____	_____	Alignment point list with: Datum __, Description __, Station __, Coords.__, Witnesses __.
-------	-------	--

Property:

_____	_____	Recorded copies of all LCRCs required for the project.
-------	-------	--

_____	_____	Government Corner list with: Datum __, Corner names __, Coordinates and 4 witnesses __, Indication of which corners are in danger of destruction __.
-------	-------	--

_____	_____	Section Corner ties to the alignment with station, distance and bearing along the section line.
-------	-------	--

_____	_____	Section map with bearings, distances between Government corners.
-------	-------	--

_____	_____	Copy of submittals to county Remonumentation (if required)
-------	-------	--

_____	_____	Copies of all research documents, tax maps, tax descriptions, deeds, recorded plats, surveys, etc.
-------	-------	---

_____	_____	A separate plot of alignment or tax map showing all property irons found, with point numbers.
_____	_____	A station offset listing of property irons.

Mapping:

A legible planimetric plot, including:
contours __, MDOT Cells symbology __,
Centerline alignment shown __.

A second plot showing all surface materials, utility connectivity and
other pertinent notes or comments.

All plots certified as per scope.

All field survey notes obtained for this project.

Drainage structure inventory is:

correlated to the structures shown on the plot __, includes all pertinent data about
the structures: Station and offset __, coordinates __, structure name __, rim
elevations __, invert depths with corresponding computed invert elevation __,
pipe sizes __, directions __, structure cover type __, culvert size, material,
condition __, headwall or end section desc. __.

Drainage Report.

A list of all utilities noting utility name, address, phone number and
contact person.

Station Offset report for each utility feature.

As-Built plans from each utility.

Miscellaneous:

Miscellaneous Information Included

Photographs

Bridge Specific Information:

Sketch of structure* in elevation view including:

Ref. Line to Ref. Line Dimensions __, Ref. Pt. Elevs. __, Ref Pt. Stations __,
Underclearance Elev. __, Abutment, bridge seat and Pier cap Elev. __, Ftg.
Elev. (if requested) __, face to face abutment and pier dimensions __, top of
Water elev. __, stream bed elevs. __, lower roadway elevs. __.

Sketch of structure* in Plan View including:

Ref. Pt. Elevs. __, Ref Pt. Stations __, Ref Pt. Coordinates __, Alignment __,
Angle of Crossing __, Deck dimensions __, Abutment and Pier cap
dimensions __.

Explanation of how reference point locations were determined.

* If plans are available this information may be shown on existing plan sheets.

CAiCE File:

_____	_____	Project Name is MDOT Job Number #####
_____	_____	CAiCE Project Description field is filled out
_____	_____	Correct Units (International Feet) selected in System Settings
_____	_____	Correct Datum Selected in System Settings
_____	_____	Z Coordinate value set to 4.2 in System Settings
_____	_____	Correct MDOT Feature Table Attached prior to Data importation
_____	_____	Correct MDOT Cell Library Attached prior to Data importation
_____	_____	Only MDOT Feature Codes Used
_____	_____	All points have appropriate Descriptions
_____	_____	Desired plot scale checked with designer
_____	_____	All survey chains edited and properly connected prior to DTM creation.
_____	_____	All survey chain crossings resolved.
_____	_____	All survey chain curves checked for correctness and aesthetics.
_____	_____	No survey chain curves are shown as chords.
_____	_____	Survey chain Patterns checked for proper direction (guardrail, railroad, treeline, etc)
_____	_____	Hydro survey chains checked for correct left to right direction.
_____	_____	Single DTM Surface is named EX (multiple surfaces = EX1, EX2, etc.)
_____	_____	DTM checked for invalid breaklines
_____	_____	DTM checked for invalid point data (spikes/holes)
_____	_____	DTM triangles checked for spikes and dips
_____	_____	Long or invalid triangles have been obscured from TIN
_____	_____	Bridge decks and data suspended above natural terrain/substructures have been removed from the terrain surface prior to triangulation.
_____	_____	Terrain surface beneath bridge decks is included in DTM
_____	_____	Underwater areas have been removed from terrain surface prior to triangulation
_____	_____	* Text size is dependent on the scale
_____	_____	_____ 100 scale, text size = 9.0
_____	_____	_____ 50 scale, text size = 4.5
_____	_____	_____ 40 scale, text size = 3.6
_____	_____	* Cell Scale set to: _____ 1.0 (1":100'), _____ 0.5 (1": 50'), _____ 0.4 (1": 40')
_____	_____	* Contour Interval set to 2 in DTM Settings
_____	_____	* Max. Offset for contour smoothing set to 1 in DTM Settings.

Contour Object Display Settings:

_____	_____	* Contour interval set to 2 regular and 10 index .
_____	_____	* All contour colors set to 5, Index set to 2
_____	_____	* Line weights set to 0 regular, 1 Index
_____	_____	* All contour levels set to 20
_____	_____	* Index Label spacing set to 60, color set to 5
_____	_____	* Character height is dependent on the scale;

_____ 100 scale, character height = 9.0
 _____ 50 scale, character height = 4.5
 _____ 40 scale, character height = 3.6
 _____ * Label Depression Contours unchecked
 _____ * Final contours computed after DTM edits and settings checked
 Display:
 _____ * Scale and text size checked prior to display
 _____ * Survey Chains displayed as per Attachment “F”
 _____ * Survey Points displayed as per Attachment “F”
 _____ * Alignment geometry chain Feature Code is SCL
 _____ * Alignment geometry chain is displayed
 _____ * Contours are displayed
 _____ * Point descriptions displayed as per Attachment “F” and scope
 _____ * All overlapping text has been clearly resolved (if requested in scope)
 _____ * All subsurface drainage can be correlated with inventory sheets.
 _____ * CAiCE drawing file created and named Job # +pl.cdg (#####cpl.cdg)
 _____ * Correct seed file selected for MicroStation file conversion

DATUM	SEED FILE
_____ Assumed	_____ MiDOT2d.dgn
_____ SPC83 South	_____ Seedfs.dgn
_____ SPC83 Central	_____ Seedfc.dgn
_____ SPC83 North	_____ Seedfn.dgn

_____ * Correct cell file selected for MicroStation file conversion
 (midote_02.cel)
 _____ * 2d MicroStation file created and named Job # +pl.dgn (#####pl.dgn)
 _____ MicroStation file of Bridge structures created with Contours (Plan of
 Site)
 _____ * Geopak files generated from the MDOT Plans Production tugboat/macro.
 _____ 3d MicroStation DGN triangle file, _____ Survey Chain (TIN
 Boundary) around edited triangle file with the name and feature
 “CLIP”,
 _____ * Job #.OBS and Job #.XYZ files (can only be generated from
 tugboat)
 _____ CAiCE archive file named with current MDOT JN (#####.zip)
 _____ Project portfolio labeled and includes data as per scope.
 _____ Used MDOT’s Plans Production tugboat/macro.

.. Many of the asterisk items can be easily completed in CAiCE using the CAiCE tugboat/macro
 AMDOT Plans Production@. Contact you project consultant for information about this
 CAiCE tugboat.

Digital Files:

_____ **All Project files and CAiCE archive recorded on a Compact Disc named**
 the same as the job number (#####.zip) and all files under the appropriate

directory headings:

ADMINISTRATION__, CONTROL__, ALIGNMENT__, PROPERTY__, MAPPING__,
MISCELLANEOUS__.

_____	_____	Project Survey Report
_____	_____	Control Point coordinates report (ASCII) with standard deviations
_____	_____	Control Point least squares adjustment statistical report (ASCII) showing Reference Factors and weighting strategies
_____	_____	Control point list (ASCII) with: Datum __, Description __, Coordinates with Std. Err. __, station offsets __, Scale Factors __, witnesses __.
_____	_____	DDPROC - .ha files for stations recovered and used as horizontal or vertical control
_____	_____	MicroStation file named job# +pl.dgn
_____	_____	Benchmark level loop - least squares adjustment report (ASCII) All level loops should be in one adjustment run if at all possible.
_____	_____	Bench Mark List (ASCII) with: Datum __, Descriptions __, Elevations __, station offsets __.
_____	_____	Describe Alignment Chain(s) (ASCII) from CAiCE Coordinates __, Bearings __, Distances __, Curve data __, Stationing __.
_____	_____	Alignment point list (ASCII) with: Datum __, Description __, Station __, Coords __, Witnesses __.
_____	_____	Government Corner list (ASCII) with: Datum __, Corner names __, Coordinates and 4 witnesses __, Indication of which corners are in danger of destruction __.
_____	_____	Property Corner report (ASCII) with Coordinates __, Station-offset __, Description __, Feature code __, Alignment name __.
_____	_____	INDIVIDUAL UTILITY REPORTS (ASCII) for each utility with: Designation __, Coordinates __, Elevation __, Description __, Feature Code __, Station-offset __.

_____	_____	Utility Owner listing (ASCII) with: Name of Utility____, Address____, Phone number____, Contact Person____.
_____	_____	Drainage structure report (ASCII or a spreadsheet compatible with MDOT software) of manholes and catch basins with: Designation____, Coordinates____, Elevation____, Description____, Feature Code____, Station- offset____, Invert and Pipe Dimension information____, Structure condition____.
_____	_____	Culvert Structure report (ASCII or a spreadsheet compatible with MDOT software) with: Designation____, Coordinates____, Elevation____, Station-offset____, Size and Material____.
_____	_____	Digital or scanned photographs.
_____	_____	CAiCE fully edited archived file with DTM (.zip)
_____	_____	All paper pages in the portfolio must be scanned into either a PDF or TIF format file even if already existing in electronic form.
_____	_____	Create one .DGN file with the Control point list, Benchmark list, Alignment point list, and Government Corner list per Attachment “E”.
_____	_____	Scope has been reviewed to insure compliance.

I have reviewed the survey notes and scope of work and certify that all required and requested information is present in the portfolio in compliance with the MDOT Survey Standards of Practice, the survey scope of work and this QA/QC Check List. Any information omitted from this submission has been explained on the sheet attached.

SEAL

Professional Surveyor #

Explanation of Omissions

This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

ATTACHMENT C
CS 41131 - JN 51902C
US-131 at 44th Street – S06 of 41131
City of Wyoming, Kent County

CONSTRUCTION CRITICAL PATH NETWORKS

I. INTRODUCTION

The Consultant is required to submit a Construction Critical Path Network at various points in the design process. Refer to the following:

P/PMS TASK 3580 - DEVELOP PRELIMINARY PLANS

P/PMS TASK 3830 - COMPLETE THE CONSTRUCTION ZONE TRAFFIC CONTROL PLAN

P/PMS TASK 3840 - DEVELOP FINAL PLANS AND SPECIFICATIONS

Construction Critical Path Networks are often needed to develop the progress schedule for a project. They are required on any project designated to include an Incentive/Disincentive or Special Liquidated Damages clause. Construction Critical Path Networks are also recommended for projects with the following characteristics:

1. New construction.
2. Major reconstruction or rehabilitation on an existing roadway that will severely disrupt traffic.
3. Unique or experimental work.
4. More than one construction season.
5. Complex staging(multiple stages with traffic shifts).

As noted in MDOT's Construction and Technology Instructional Memorandum 1997-7, Progress Schedule Determinations/Critical Path Rates,

Apreparation of a Critical Path is a requirement on all consultant-designed projects, regardless of the project type or complexity.@

The MDOT Resident Engineer assigned to the project should be consulted when developing Construction Critical Path Networks.

MDOT requires the precedence diagramming method. The Consultant will submit this network in MPX version 4.0.

II. NETWORK DEVELOPMENT

The network will be defined using the following steps.

1. Activity definition.
2. Activity sequencing.
3. Duration estimation.
4. Schedule development.

1. ACTIVITY DEFINITION

The Consultant will define the specific activities in enough detail so that the proper objectives will be met. The Consultant must identify assumptions (those factors considered true, real or certain). Supporting detail for the activities should be documented and organized as needed to simplify the review of the activities by MDOT personnel.

The Construction Critical Path Network must start with the ALetting Date@ as the first activity and terminate with the AEnd of Project@ as the finish activity.

A sufficient number of activities will be required with sufficient detail so that the controlling construction operation(s) may be identified. Notation on each activity shall include a brief work description and activity time duration.

2. ACTIVITY SEQUENCING

Activity sequencing involves identifying and documenting interactivity dependencies. The Consultant must sequence activities accurately to support later development of a realistic and achievable construction schedule. Two types of dependencies should be considered. Mandatory dependencies are inherent in the nature of the work being done, such as construction sequencing. Discretionary dependencies are based on a knowledge of the work to be done. Constraints are used to show how the activities relate to each. The Consultant must include documentation supporting all discretionary dependencies used in the project. All activities must lead to another activity. Only Start to Start, Finish to Finish and Finish to Start relationships will be allowed. All logic shall show how the given activity is dependent on its preceding activities.

3. DURATION ESTIMATION

After the Consultant has sequenced the activities, the Consultant should determine the activity duration. Activity duration estimating involves assessing the number of work periods likely to be needed to accomplish each activity. Duration (working days): No activity will have a duration greater than 20 working days unless approved by the Engineer. Activities that will be allowed to exceed 20 working days include, but are not limited to, working drawing approvals or other activities not under the control of the

Contractor. If requested by the Engineer, the Consultant shall explain the reasonableness of activity time durations. The approved MDOT production rates will be used in estimating activity duration. These are available in the Supplemental Information section of this attachment. The Consultant must document and submit all assumptions made during the duration estimation to MDOT.

4. SCHEDULE DEVELOPMENT

The activity sequencing, duration estimations and the calendars are combined to create the construction schedule. During the development of the schedule the Consultant will verify:

1. The required schedule to build the project.
2. The constructability of the project.
3. If the maintaining traffic scheme will work.
4. If seasonal limitations will affect the construction.
5. Any other project specific considerations.

The MDOT Calendars will be used by the Consultant in developing the network. The calendars are based on a 4, 5 or 6 day work week. The MDOT Calendars are included in the Supplemental Information section of this attachment.

At this point there should be no negative float in the network. If there is, there is an error in the network and the error must be corrected before network submittal.

All summary tasks shall be removed prior to submittal to MDOT Project Manager

III. DELIVERABLES

After this final step the design consultant will submit the finished CPM schedule to MDOT

1. Documents

- A. 11" x 17" PDF plot of the network.
- B. Work Day / Completion Date Determination Worksheet.
- C. List of any other assumptions or controlling factors used in creating the network. For example, permit or maintaining traffic restrictions.

2. Electronic Format

This section sets the requirements for the electronic submittal of the Consultant's Construction Network. All networks shall be submitted on a 3.5 inch floppy disk (or via E-mail) using one of the following formats:

- A. **Standard Electronic Media Format:** This is a standard ASCII text file containing the data elements below, in the order specified. This file can be created using any text editor or word processing application (i.e., MS-Word, WordPerfect, Notepad, Write) but must be saved as an ASCII file.

The **first line** will provide a descriptive header describing the submittal and containing:

Control Section
Job Number
Route
Consultant name
Date of Submittal

The next line will be **blank**, followed by multiple data lines.

Each **data line** will contain one record pertaining to one task of the job. Separate data fields by a comma. Fields within each task line are as follows:

(Note that the term "task" is synonymous with "activity." Leave fields that are not required blank)

- (1) Task # (Job # followed by a hyphen followed by this task's unique 4 digit task number. This is the Preceding Event Activity Code)
- (2) Description of Task, Milestone or Hammock, blank if this record is a constraint
- (3) Calendar (see attached list)
- (4) Duration of task, blank for constraints
- (5) Task # of the next task (Succeeding Event) - leave blank if this record is not a constraint or hammock
- (6) Type of constraint (FS, SS, FF) - leave blank if this record is not a constraint.
- (7) Delay, if required
- (8) Original "Baseline" Start Date
- (9) Original "Baseline" Finish Date
- (10) Current (forecast) Start Date (early start)
- (11) Current (forecast) Finish Date (early finish)
- (12) Estimated completion date (if different from early start + current duration)
- (13) Late Start Date
- (14) Late Finish Date
- (15) Actual Start Date
- (16) Actual Finish Date

Example - each line contains the following:

Task # (preceding event), Description, Calendar, Duration, Next Task # (succeeding event), Constraint Type, Delay, Baseline Start, Baseline Finish, Early Start, Early Finish, Estimated Completion Date, Late Start, Late Finish, Actual Start, Actual Finish, Total Float.

- B. **Primavera Project Planner(P3) 2.0 Export Procedure:** Users who have Primavera Project Planner(P3) version 2.0 can automatically create a export file by following the below export procedure below. **Users having an older version of Primavera may use the applications export feature only if they are able to include all the data elements listed in the version 2.0 format.**

1. Choose Tools, Project Utilities, **EXPORT**
2. Click **ADD**, Then click **OK** to accept the next sequential ID number, or type a unique number to identify the specifications and click **OK**
3. Enter a description for the specification in the Title field
4. Specify data items to export

Activities

- Select **Contents of List**
- Use the Description column to specify which data items to export
- To add items, click the right mouse button in the Description column and choose from the list. Suggested Items include: **Activity ID, Activity Description, Actual Start, Actual Finish, Calendar ID, Early Start, Early Finish, Late Start, Late Finish, Original Duration.**
- Select **All Current, All Target, or All Target2**
- Set Description Length to 48

OR

Constraints

- Select **Successor relationships** - Choose this option to export Activity IDs and their corresponding successors only. Lags and relationship types will also be displayed in this output file.

5. Click **FORMAT** in Export Dialog Box
6. In the Output file section, enter a new name and path (ex. A:\actexp or A:\conexp). Do not include a file extension.
7. In the type field, click the minimize button and choose the **[.PRN]** - **ASCII** file format for the output file.
8. Select **CALENDAR** for Date Format
9. Set ASCII Output Field Separation to **1** and Blank column width to **0**

10. Click **RUN**
11. In the Output Options dialog box, click on **OK**

NOTE: A COMPLETED FILE EXPORT WILL CONSIST OF 2 EXPORT FILES (ACTIVITIES & CONSTRAINTS)

- C. **Microsoft Project Export Procedure:** Users of Microsoft Project Version 4.0 and above can create a Microsoft Project Exchange (MPX) file by following the procedure below.
1. Choose File, Save As from the main menu
 2. In the Save File as Type box Select **MPX 4.0**
 3. On the drive box select a: or whichever drive is the 3.5" Floppy drive
 4. Click on **OK**
- This saves the file in MPX format.
- D. **Primavera Sure Track:** Users of Sure Track Version 2.0 and above can create a Microsoft Project Exchange (MPX) file by following the procedure below.
1. Choose File, Save As from the main menu
 2. In the filename box input a filename
 3. In the Save File as Type box Select **MPX**
 4. On the drive box select a: or whichever drive is the 3.5" Floppy drive
 5. Click on **OK**
- This saves the file in MPX format
- E. **Scitor Project Scheduler 7 Export Procedure:** Users of Scitor Project Scheduler Version 7 and above can create a Microsoft Project Exchange (MPX) file by following the procedure below.
1. Choose File, Save As from the main menu
 2. In filename box select a filename
 3. In the Save File as Type box Select **MPX**
 4. On the drive box select a: or whichever drive is the 3.5" Floppy drive
 5. Click on **OK**
- This saves the file in MPX format
- F. **Export Files with Other Scheduling Applications:** Most scheduling packages have export functions similar to those described above. If the Consultant chooses to use packages with export capabilities, they shall include all items listed in the Standard Media Format in a text or ASCII type file.

IV. SUPPLEMENTAL INFORMATION

A. MDOT CRITICAL PATH-CONSTRUCTION TIME ESTIMATES

Drainage

Cross Culverts

Rural Highways	40 m/day
Expressways	50 m/day
Large Headwalls	5 days/unit
Slab or Box Culverts	5 days/pour
Plowed in Edge Drain(production type project)	4500 m/day
Open Graded Underdrain(production type project)	1200 m/day

Sewers

0m-5m(up to 1500mm)	40 m/day
0m-5m(over 1500mm)	25 m/day
5m-over(up to 1500mm)	25 m/day
5m-over(over 1500mm)	20 m/day
Jacked-in-place	13 m/day
including excavation pit & set up	min. 5 days

Tunnels

hand mining	8 m/day
machine mining	20 m/day
including excavation pit & set up	min. 5 days

Manholes

3 units/day

Catch Basin

4 units/day

Utilities

Water Main(up to 400mm)	100 m/day
Flushing, Testing & Chlorination	4 days
Water Main(500mm-1050mm)	25 m/day
Flushing, Testing & Chlorination	5 days
Order & Deliver 600 mm HP Water Main	50 days/order
Gas Lines	100 m/day

Earthwork and Grading

Embankment(CIP)
Excavation and/or Embankment(Freeway)
Excavation and/or Embankment(Reconstruction)
Embankment(Lightweight Fill)
Muck(Excavated Waste & Backfill)
Excavation(Widening)
Grading(G & DS)
Subbase and Selected Subbase(up to 7.4m)
Subbase and Selected Subbase(7.4 m & over)

Metro Exp

1500 m3/day
1500 m3/day
750 m3/day
300 m3/day

Rural

5300 m3/day
9200 m3/day
3800 m3/day
600 m3/day
1500 m3/day
600 m/day
750m/day
600 m/day
450 m/day

Subgrade Undercut & Backfill	1500 m ³ /day
Subbase & Open-Graded Drainage Course	450 m/day
Surfacing	
Concrete Pavement(7.3m)	450 m/day
Including Forming & Curing	min. 7 days
Bituminous Pavement(7.3m)	1200 m/day/course
Concrete Ramps(4.9m)	300 m/day
Including Forming & Curing	min. 7 days
Curb(1 side)	750 m/day
Concrete Shoulder-Median	1200 m ² /day
Bituminous Shoulders(1 side per course)	750 m/day
Sidewalk	180 m ² /day
Sidewalk(Patching)	65 m ² /day
Structures	
Sheeting(Shallow)	30 m/day
General Excavation at Bridge Site	750 m ³ /day
Excavation for Substructure(Footings)	1 unit/day
Piles(12m)	15 piles/day
Substructure(Piers & Abutments)	5 days/unit
Order and Delivery of Beams	
Plate Girders	100-120 days/order
Rolled Beams	90-120 days/order
Concrete Beams	50 days/order
Erection of Structural Steel	3 days/span
Bridge Decks	
Form & Place Reinforcement(60m Structure)	15 days
Pour Deck Slab(1 1/5 days/pour)	2 days/span
Cure	14 days
2 Course Bridge Decks	
Add 9 days for Second Course Latex	
Add 12 days for Second Course Low Slump	
Sidewalks and Railings	
Sidewalks and Parapets	5 days/span
Slip Formed Barriers	2 days/span
Clean Up	10 days
Pedestrian Fencing	
Shop Plan Approval & Fabrication	1-2 months
Erection	1 week/bridge
Rip Rap Placement	
Bucket Dumped	385 m ³ /day

Bucket Dumped and Hand Finished	131-523 m ³ /day
Retaining Walls	1 Panel/day min. 10 days
Railroad Structures	
Grade Temporary Runaround	750 m ³ /day
Ballast, Ties & Track	50 m/day
Place Deck Plates	5 days/span
Waterproof, Shotcrete & Mastic	5 days/span
Railroad Crossing Reconstruction	10-15 work days (depends on if concrete base is involved)
Temporary Railroad Structures	
Order & Deliver Steel	55 days/order
Erect Steel	1 day/span
Ties and Track	3 days/span
Pumphouse	
Structure	30 days/m
Order & Deliver Electrical & Mechanical Equipment	90 days
Install Electrical & Mechanical Equipment	30 days
Miscellaneous	
Removing Old Pavement	60 m/day
Removing Old Pavement for Recycling(7.3m)	450 m/day
Crushing Old Concrete for 6A or OGDC	1350 mtons/day
Removing Trees(Urban)	15 units/day
Removing Trees(Rural)	30 units/day
Removing Concrete Pavement	450 m ² /day
Removing Sidewalk	250 m ² /day
Removing Curb & Gutter	450 m/day
Removing Bitumin.ous Surface	1600 m ² /day
Conditioning Aggregate	900 m/day
Bitumin.ous Base Stablizing	2500 m ² /day
Ditching	600 m/day
Trenching for Shoulders	750 m/day
Station Grading	610 m/day
Clearing	8000 m ² /day

Restoration(Topsoil, Seeding, Fertilizer & Mulch)	1650 m2/day
Sodding	2100 m2/day
Seeding	40000 m2/day
Guard Rail	230 m/day
Fence(Woven Wire)	360 m/day
Fence(Chain Link)	150 m/day
Clean Up	600 m/day
Concrete Median Barrier	300 m/day
Cure	min. 7 days
Reroute Traffic(Add 4 days if 1st item)	1 day/move
Concrete Glare Screen	450 m/day
Light Foundations	6 units/day
Order & Delivery	6-8 week/order
Remove Railing & Replace with Barrier(1 or 2 decks at a time)	4 days/side
Longitudinal Joint Repair	1600 m/day
Crack Sealing	4800 m/day
Joint and Crack Sealing	500 m/day
Repairing Pavement Joints - Detail 7 or 8	200 m/day
Seal Coat	6400 lane m/day
Diamond Grinding/Profile Texturing Concrete	3300 m2/day
Rest Area Building	
Order Material	3 months
Construct Building	9 months
Tower Lights	
Order and Deliver Towers	100 days
Weigh-In-Motion	
Order and Deliver Materials	1 month-6weeks
O & D with Installation	3 months
Raised Pavment Markers	300 each/day
Attenuators	2 each/day
Shoulder Corrugations, Ground or Cut	8 km-9.7 km/side/day
Aggregate Base	2900 m ² /day
Aggregate Shoulders	350 m ³ /day
Freeway Signing - 3# Post Type	50 signs/day
Concrete Joint Repair (High Production-Projects with > 1000 patches)	
Average(1.8m)	50 patches/day
Large(>1.8m)	500 m2/day
Bridge Painting	90 m2/day
Pin and Hanger Replacement	3 beams/day
Order Pin & Hanger	60 days

Bridge Repair

Scarifying(Including Clean up)	10000 m2/day
Joint Removal(Including Clean up)	4 m/day
Formin.g & Placement	3.5 m/day
Hydro-Demolishing	300 m/day
Barrier Removal	15 m/day
Placement	45 m/day
Hand Chipping (Other than Deck)	.24 m ³ /person/day
Shoulder Corrugations, Ground or Cut	8 km-9.7 km/side/day
Casting Latex Overlay	250 m/day
Curing Overlay	
Regular	4 days
High Early	1 day
Thrie Beam Retrofit	30 m/day
Beam End Repairs	
Welded Repairs	.75 days/repair
Bolted Repairs	.50 days/repair
Bolted Stiffeners (Pair)	.25 days/repair
Grind Beam Ends	.25 days/repair
Welded Stiffeners (Pair)	.25 days/repairH-
Pedestal Repairs:	
Welded Repair	.50 days/each
Replacement	1 day/each
Deck Removal	235 m ² /day

Surfacing-Bituminous

Metro-Primary(<18000mtons)	
Paving	540 mtons/day
Joints	150 m/day
Cold Milling	3400 m2/day
Aggregate Shoulders	900 mtons/day
Metro Primary(>18000mtons)	
Paving	540 mtons/day
Joints	200 m/day
Cold Milling	7500 m2/day
Metro Interstate(>18000mtons)	
Paving	1100 mtons/day
Joints	360 m/day
Aggregate Shoulders	900 mtons/day
Urban Primary(<18000mtons)	
Paving	640 mtons/day
Joints	100 m/day
Cold Milling	1700 m2/day

	Rubblizing	1700 m2/day
	Aggregate Shoulders	450 mtons/day
Urban Primary(>18000mtons)		
	Paving	1000 mtons/day
	Joints	120 m/day
	Cold Milling	1700 m2/day
	Aggregate Shoulders	500 mtons/day
Urban Interstate(>18000mtons)		
	Paving	1200 mtons/day
	Joints	220 m/day
	Cold Milling	1700 m2/day
	Rubblizing	5800 m2/day
	Aggregate Shoulders	640 mtons/day
Rural Primary(<18000mtons)		
	Paving	640 mtons/day
	Joints	120 m/day
	Cold Milling	590 mtons/day
	Crush & Shape	10000 m2/day
	Aggregate Shoulders	640 mtons/day
Rural Primary(>18000mtons)		
	Paving	1100 mtons/day
	Joints	150 m/day
	Cold Milling	800 mtons/day
	Crush & Shape	10000 m2/day
Rural Interstate(>18000mtons)		
	Paving	1280 mtons/day
	Joints	220 m/day

B. WORKSHEET

WORK DAY/COMPLETION DATE DETERMINATION

CS: JN:

DESCRIPTION OF WORK: _____

MAJOR WORK ITEM	PRODUCTION QUANTITY	RATE	ESTIMATED TIME
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This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

TOTAL ESTIMATED TIME:

COMPLETION DATE: _____ (Calendar Days or Work Days)

COMMENTS:

C. MDOT CALENDARS

The following are the MDOT 4, 5 and 6 day calendars:

CALENDAR	DESCRIPTION	START	FINISH
1	Std - Apr 16 - Nov 15 - 4 day	APR 16	NOV 15
2	LP - Bit Stab - 4 day	MAY 15	OCT 15
3	UP - Bit Stab - 4 day	JUN 01	OCT 01
4	LP S of M-46 - Bit Pave - 4 day	MAY 05	NOV 15
5	LP N of M-46 - Bit Pave - 4 day	MAY 15	NOV 01
6	UP - Bit Pave - 4 day	JUN 01	OCT 15
7	LP - Bit Seal Coat - 4 day	JUN 01	SEP 15
8	UP - Bit Seal Coat - 4 day	JUN 15	SEP 01
9	Tree Planting - Deciduous - 4 day	MAR 01 OCT 01	MAY 15 NOV 15
10	Tree Planting - Evergreen - 4 day	MAR 01	JUN 01
11	South LP - Restoration - 4 day	MAY 01	OCT 10
12	North LP - Restoration - 4 day	MAY 01	OCT 01
13	UP - Restoration - 4 day	MAY 01	SEP 20
14	Full Year - Winter Work - 4 day	JAN 01	DEC 31
21	Std - Apr 16 - Nov 15 - 5 day	APR 16	NOV 15
22	LP - Bit Stab - 5 day	MAY 15	OCT 15
23	UP - Bit Stab - 5 day	JUN 01	OCT 01
24	LP S of M-46 - Bit Pave - 5 day	MAY 05	NOV 15
25	LP N of M-46 - Bit Pave - 5 day	MAY 15	NOV 01
26	UP - Bit Pave - 5 day	JUN 01	OCT 15
27	LP - Bit Seal Coat - 5 day	JUN 01	SEP 15
28	UP - Bit Seal Coat - 5 day	JUN 15	SEP 01
29	Tree Planting - Deciduous - 5 day	MAR 01 OCT 01	MAY 01 NOV 15
30	Tree Planting - Evergreen - 5 day	MAR 01	JUN 01

31	South LP - Restoration - 5 day	MAY 01	OCT 10
32	North LP - Restoration - 5 day	MAY 01	OCT 01
33	UP - Restoration - 5 day	MAY 01	SEP 20
34	Full Year - Winter Work - 5 day	JAN 01	DEC 31
35	Full Year - Expedited - 6 day	JAN 01	DEC 31

above notes before inserting into scope of work)

ATTACHMENT D
CS 41131 - JN 51902C
US-131 at 44th Street – S06 of 41131
City of Wyoming, Kent County

MONTHLY PROGRESS REPORTS

The first two pages of this attachment are the necessary layout of the Monthly progress reports and the last three pages are a completed example.

Control Section 00000
Job Number 00000C
Structure Number S00
Date 00/00/00

MONTHLY PROGRESS REPORT

- A. Work accomplished during the previous month.
- B. Anticipated work items for the upcoming month.
- C. Real or anticipated problems on the project.
- D. Update of previously approved detailed project schedule (attached), including explanations for any delays or changes.
- E. Items needed from MDOT.
- F. Copy of Verbal Contact Records for the period (attached).

Structure Number - Control Section - Job Number
Route, Location Description
Design Schedule as of 00/00/95

LIST TASKS, SUBMITTALS, APPROVALS AND MEETINGS AS OUTLINED IN SCOPE OF DESIGN SERVICES AS NEEDED. THIS LIST IS JUST AN EXAMPLE.

Original Authorized Start Date	Original Authorized Finish Date	(Anticipated) or Actual Start Dates	(Anticipated) or Actual Finish Dates	Task	Task Description
00/00/00	00/00/00	00/00/00	00/00/00	??	Initial project meeting.
00/00/00	00/00/00	00/00/00	00/00/00	3330	Conduct Design Survey..
00/00/00	00/00/00	00/00/00	00/00/00	3360	Prepare Base Plans
00/00/00	00/00/00	00/00/00	00/00/00		Submit Base Plans
00/00/00	00/00/00	00/00/00	00/00/00	3580	Develop Preliminary Plans
00/00/00	00/00/00	00/00/00	00/00/00	3390	Develop Construction Zone Traffic Control Concepts
00/00/00	00/00/00	00/00/00	00/00/00	3540	Develop Construction Zone Traffic Control Plan
00/00/00	(00/00/00)	00/00/00	00/00/00	3550	Develop Preliminary Traffic Operations Plan.
00/00/00	(00/00/00)	00/00/00	00/00/00	3351	Review & Submit of Preliminary Right-Of-Way Plans.
00/00/00	(00/00/00)	00/00/00	00/00/00		Submittal of The Plan Review Package.
00/00/00	(00/00/00)	00/00/00	00/00/00		Completion of the Plan Review Meeting.
00/00/00	(00/00/00)	00/00/00	00/00/00	3840	Develop Final Plans and Specifications
00/00/00	(00/00/00)	00/00/00	00/00/00		Submittal of final plans/proposal package to MDOT for final review.
00/00/00	00/00/00	00/00/00	00/00/00	3870	Omissions/Errors Check (OEC) Meeting
00/00/00	00/00/00	00/00/00	00/00/00		Consultant's Plan Completion: Final Construction Plan/Proposal package with recommendations incorporated to MDOT (two weeks after OEC Meeting)
00/00/00	00/00/00	00/00/00	00/00/00		Final Deliverables to MDOT

Control Section 12345
Job Number 11111C
Structure Number S02
Date 07/31/95

MONTHLY PROGRESS REPORT

- A. Work accomplished during the previous month.
 - 1. During the last month we completed the Final Right of Way plans and submitted them to Thomas Nelson, Jr. on 05/01/99.
- B. Anticipated work items for the upcoming month.
 - 1. Submit the Preliminary Plans and related material on 03/11/99.
 - 2. Attend the meeting regarding the Ameritech lines on the bridge, scheduled for 03/12/99.
- C. Real or anticipated problems on the project.
 - 1. We foresee no problems at this time.
- D. Update of previously approved detailed project schedule (attached), including explanations for any delays or changes.
 - 1. The design is falling behind schedule because we had problems resolving the geometries of the ramps in relation to the bridge. The Preliminary Plan submittal will be the only task affected by this delay because we will make up the lost time prior to submitting the Final Plans and Specifications.
- E. Items needed from MDOT.
 - 1. Prior to final Plan submittal we will need the latest Special provision and Supplemental Specification checklist.
- F. Copy of Verbal Contact Records for the period (attached).
 - 1. Discussed bridge and ramp geometries with Tom Myers of M\$DOT Traffic and Safety Division on 07-24-95.

SN: S02 - CS: 12345 - JN: 1111C
M-111, from There Village Limits to north of That Road
Design Schedule as of 07/31/95

Original Authorized Start Date	Original Authorized Finish Date	(Anticipated) or Actual Start Dates	(Anticipated) or Actual Finish Dates	Task	Task Description
01/12/95	01/12/95	01/12/95	01/12/95??		Initial project meeting.
01/29/95	01/29/95	01/30/95	01/30/95 3330		Conduct Design Survey.
02/17/95	04/10/95	02/17/95	04/20/95 3360		Prepare Base Plans.
02/29/95	02/29/95	02/29/95	02/29/95 3390		Develop the Construction Zone Traffic Control Concepts
03/12/95	03/13/95	03/12/95	(03/30/95)	3540	Develop Construction Zone Traffic Control Plan
03/20/95	03/19/95	03/25/95	(03/30/95)	3551	Develop/Review Preliminary Traffic Signal Plan
07/01/95	07/01/95	(07/01/95)	(07/01/95)	3590	The Plan Review Meeting
07/11/95	08/11/95	(07/11/95)	(08/11/95)	3821	Complete/Review Traffic Signal Plan
09/15/95	09/15/95	(09/15/95)	(09/15/95)	3830	Complete Construction Zone Traffic Control Plan.
09/16/95	09/16/95	(09/16/95)	(09/16/95)	3840	Develop Final Plans and Specifications
09/25/95	09/23/95	(09/25/95)	(09/25/95)	3870	Omissions/Errors Check (OEC) Meeting

VERBAL CONTACT RECORD

Control Section 12345
Job Number 11111C
Structure Number S02
Date 07/31/95

Joe Engineer talked to Tom Myers and decided to use a 0.05'/ft super on ramp A leading into the bridge.

ATTACHMENT E
CS 41131 - JN 51902C
US-131 at 44th Street – S06 of 41131
City of Wyoming, Kent County

MDOT DESIGN CONSULTANT MANUAL

The MDOT Design Consultant Manual is now listed on the MDOT Bulletin Board System and can be found under the D_CONSLT Library. An index of the latest version of the task descriptions along with any revisions will be included as part of this authorization. A detail description of each P/PMS task can be found in the MDOT Design Consultant Manual.

P/PMS TASK - INDEX - VERSION 2 rev 2
ISSUED 9/29/2000

P/PMS TASK	CURRENT DATE	LATEST REVISION DATE
3120 - CONDUCT STRUCTURE DECK CONDITION SURVEY	07/29/99	
3330 - CONDUCT DESIGN SURVEY	07/29/99	
3340 - CONDUCT STRUCTURE SURVEY	07/29/99	
3350 - CONDUCT HYDRAULICS SURVEY	07/29/99	
3360 - PREPARE BASE PLANS	06/22/99	
3361 - REVIEW AND SUBMIT PRELIMINARY RIGHT OF WAY (PROW) PLANS	07/16/99	
3370 - PREPARE STRUCTURE STUDY	06/16/99	
3380 - REVIEW BASE PLANS	06/29/99	
3390 - DEVELOP THE CONSTRUCTION ZONE TRAFFIC CONTROL CONCEPTS	07/16/99	
3510 - PERFORM ROADWAY GEOTECHNICAL INVESTIGATION	07/29/99	
3520 - CONDUCT HYDROLOGIC, HYDRAULIC AND SCOUR ANALYSES	08/29/00	revised per P. Schriener
3530 - CONDUCT FOUNDATION STRUCTURE INVESTIGATION	07/16/99	
3540 - DEVELOP CONSTRUCTION ZONE TRAFFIC CONTROL PLAN	07/16/99	
3551 - DEVELOP/REVIEW PRELIMINARY TRAFFIC SIGNALS PLAN	07/16/99	added to index 1/5/2000
3552 - DEVELOP PRELIMINARY PERMANENT PAVEMENT MARKING PLAN	07/16/99	
3553 - DEVELOP PRELIMINARY NON - FREEWAY SIGNING PLAN	07/16/99	
3554 - DEVELOP PRELIMINARY FREEWAY SIGNING PLAN	07/16/99	
3570 - PREPARE PRELIMINARY STRUCTURE PLANS	07/16/99	
3580 - DEVELOP PRELIMINARY PLANS	06/30/99	
3581 - FINAL RIGHT-OF-WAY PLANS	07/16/99	

P/PMS TASK	CURRENT DATE	LATEST REVISION DATE
3590 - REVIEW PRELIMINARY PLANS	06/29/99	
3670 - DEVELOP MUNICIPAL UTILITY PLANS	06/30/99	
3675 - DEVELOP ELECTRICAL PLANS	07/01/99	
3710 - DEVELOP REQUIRED MITIGATION (FOR INFORMATION ONLY, THIS IS NOT A CONSULTANT TASK)	07/16/99	
3720 - SUBMIT ENVIRONMENTAL PERMIT APPLICATIONS (FOR INFORMATION ONLY, THIS IS NOT A CONSULTANT TASK)	07/16/99	
3821 - COMPLETE/REVIEW TRAFFIC SIGNAL PLANS	07/16/99	
3822 - COMPLETE PERMANENT PAVEMENT MARKING PLAN	07/16/99	
3823 - COMPLETE NON-FREEWAY SIGNING PLAN	07/16/99	
3824 - COMPLETE FREEWAY SIGNING PLAN	07/16/99	
3830 - COMPLETE CONSTRUCTION ZONE TRAFFIC CONTROL PLAN	06/22/99	
3840 - DEVELOP FINAL PLANS AND SPECIFICATIONS	07/02/99	
3850 - DEVELOP STRUCTURE FINAL PLANS AND SPECIFICATIONS	07/29/99	
3870 - HOLD OMISSIONS/ERRORS CHECK (OEC) MEETING	07/13/99	
4120 - OBTAIN PRELIMINARY TITLE COMMITMENTS	06/29/99	
4130 - PREPARE MARKED FINAL R.O.W. PLANS	06/29/99	
4140 - PREPARE PROPERTY LEGAL INSTRUMENTS	06/29/99	
5010 - CONSTRUCTION PHASE ENGINEERING ASSISTANCE	07/29/99	